



Service Manual



Service Manual

C2100

Model : C2100



Table Of Contents

| | | | |
|---|-----------|--|------------|
| 1. INTRODUCTION | 5 | 4.7 MIC Trouble | 71 |
| 1.1 Purpose..... | 5 | 4.8 SIM Card Interface Trouble..... | 73 |
| 1.2 Regulatory Information..... | 5 | 4.9 Earphone Trouble | 75 |
| 1.3 Abbreviations | 7 | 4.10 KEY backlight Trouble | 77 |
| 2. PERFORMANCE..... | 9 | 4.11 Receiver Trouble..... | 79 |
| 2.1 H/W Features..... | 9 | 4.12 Microphone Trouble | 81 |
| 2.2 Technical Specification | 10 | 4.13 RTC Trouble | 83 |
| 3. TECHNICAL BRIEF | 15 | 4.14 Indication LED Trouble | 85 |
| 3.1 Transceiver (SI4205, U505)..... | 15 | 4.15 Folder on/off Trouble..... | 87 |
| 3.2 Power Amplifier Module (SKY77325, U501)..... | 21 | 5. DOWNLOAD AND CALIBRATION | 89 |
| 3.3 26 MHz Clock (VCTCXO, X500)..... | 22 | 5.1 Download | 89 |
| 3.4 Power Supplies for RF Circuits (RF LDO, U503)..... | 22 | 5.2 Calibration..... | 95 |
| 3.5 Digital Main Processor (AD6527, U101) | 23 | 6. BLOCK DIAGRAM | 98 |
| 3.6 Analog Main & Power Management Processor (AD6537B, U102) | 29 | 7. CIRCUIT DIAGRAM | 99 |
| 3.7 Display and Interface | 39 | 8. PCB LAYOUT | 105 |
| 3.8 Keypad Switches and Scanning | 41 | 9. ENGINEERING MODE | 107 |
| 3.9 Microphone | 42 | 9.1 BB Test [MENU 1]..... | 108 |
| 3.10 Main Speaker..... | 42 | 9.2 RF Test [MENU 2]..... | 109 |
| 3.11 Headset Interface..... | 43 | 9.3 MF mode [MENU 3] | 110 |
| 3.12 Key Back-light Illumination..... | 44 | 9.4 Trace option [MENU 4] | 111 |
| 3.13 LCD Back-light Illumination..... | 45 | 9.5 Call timer [MENU 5] | 111 |
| 3.14 VIBRATOR..... | 46 | 9.6 Fact. Reset [MENU 6]..... | 111 |
| 4. TROUBLESHOOTING | 47 | 9.7 S/W version..... | 111 |
| 4.1 RX Trouble..... | 47 | 10. STAND ALONE TEST | 112 |
| 4.2 TX Trouble | 55 | 10.1 Introduction | 112 |
| 4.3 Power On Trouble..... | 63 | 10.2 Setting Method..... | 112 |
| 4.4 Charging Trouble | 65 | 10.3 Means of Test | 113 |
| 4.5 Vibrator Trouble | 67 | 11. AUTO CALIBRATION..... | 115 |
| 4.6 LCD Trouble..... | 69 | 11.1 Overview | 115 |

| | |
|----------------------------------|-----|
| 11.2 Requirements..... | 115 |
| 11.3 Menu and Settings | 115 |
| 11.4 AGC | 116 |
| 11.5 APC..... | 116 |
| 11.6 ADC | 117 |
| 11.7 Setting..... | 117 |
| 11.8 How to do calibration | 117 |

12. EXPLODED VIEW & REPLACEMENT PART LIST 119

| | |
|---------------------------|-----|
| 12.1 EXPLODED VIEW | 119 |
| 12.2 Replacement Parts | |
| <Mechanic component>..... | 121 |
| <Main component> | 123 |
| 12.3 Accessory | 135 |

1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

1. INTRODUCTION

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated  by the sign. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

| | |
|--------|---|
| APC | Automatic Power Control |
| BB | Baseband |
| BER | Bit Error Ratio |
| CC-CV | Constant Current - Constant Voltage |
| DAC | Digital to Analog Converter |
| DCS | Digital Communication System |
| dBm | dB relative to 1 milliwatt |
| DSP | Digital Signal Processing |
| EEPROM | Electrical Erasable Programmable Read-Only Memory |
| ESD | Electrostatic Discharge |
| FPCB | Flexible Printed Circuit Board |
| GMSK | Gaussian Minimum Shift Keying |
| GPB | General Purpose Interface Bus |
| GSM | Global System for Mobile Communications |
| IPUI | International Portable User Identity |
| IF | Intermediate Frequency |
| LCD | Liquid Crystal Display |
| LDO | Low Drop Output |
| LED | Light Emitting Diode |
| OPLL | Offset Phase Locked Loop |
| PAM | Power Amplifier Module |
| PCB | Printed Circuit Board |
| PGA | Programmable Gain Amplifier |
| PLL | Phase Locked Loop |
| PSTN | Public Switched Telephone Network |
| RF | Radio Frequency |
| RLR | Receiving Loudness Rating |
| RMS | Root Mean Square |
| RTC | Real Time Clock |
| SAW | Surface Acoustic Wave |
| SIM | Subscriber Identity Module |
| SLR | Sending Loudness Rating |
| SRAM | Static Random Access Memory |

1. INTRODUCTION

| | |
|--------|--|
| STMR | Side Tone Masking Rating |
| TA | Travel Adapter |
| TDD | Time Division Duplex |
| TDMA | Time Division Multiple Access |
| UART | Universal Asynchronous Receiver/Transmitter |
| VCO | Voltage Controlled Oscillator |
| VCTCXO | Voltage Control Temperature Compensated Crystal Oscillator |
| WAP | Wireless Application Protocol |

2. PERFORMANCE

2.1 H/W Features

| Item | Feature | Comment |
|--------------------|--|---------|
| Standard Battery | Li-ion, 1000mAh Battery Size : 34.15 (W) x 53.55(H) x 5.7(T) [mm] Battery Weight : 25g | |
| Stand by Current | Under the minimum current consumption environment (such as paging period 9), the level of standby current is below 4mA. | |
| Talk time | Up to 3 hours (GSM TX Level 5) | |
| Stand by time | Up to 200 hours (Paging Period: 9, RSSI: -85 dBm) | |
| Charging time | Approx. Under 3.75 hours | |
| RX Sensitivity | GSM, EGSM: -107dBm, DCS: -107dBm | |
| TX output power | GSM, EGSM: 33dBm(Level 5), DCS: 30dBm(Level 0) | |
| GPRS compatibility | Class 10 | |
| SIM card type | 3V only | |
| Display | Main LCD : CSTN 128 x 160 pixel 65K Color Sub LCD : STN 96 x 64 pixel MONO | |
| Status Indicator | Hard icons. Key Pad 0 ~ 9, #, *, Up/Down Navigation Key Menu Key, Clear Key Send Key, END/PWR Key Soft Key(Left/Right) | |
| ANT | Internal | |
| EAR Phone Jack | Yes (mono) | |
| PC Synchronization | Yes | |
| Speech coding | EFR/FR/HR | |
| Data and Fax | Yes | |
| Vibrator | Yes | |
| Loud Speaker | Yes | |
| Voice Recoding | Yes | |
| Microphone | Yes | |
| Speaker/Receiver | One way dual speaker | |
| Travel Adapter | Yes | |
| MIDI | 40 Poly (Mono SPK) | |
| Options | Data Kit , CD | |

2. PERFORMANCE

2.2 Technical Specification

| Item | Description | Specification | | | | | |
|------|-----------------|--|--------|--------|-------|--------|--------|
| 1 | Frequency Band | GSM <ul style="list-style-type: none">• TX: 890 + n x 0.2 MHz• RX: 935 + n x 0.2 MHz (n=1~124) EGSM <ul style="list-style-type: none">• TX: 890 + (n-1024) x 0.2 MHz• RX: 935 + (n-1024) x 0.2 MHz (n=975~1024) DCS <ul style="list-style-type: none">• TX: 1710 + (n-512) x 0.2 MHz• RX: 1805 + (n-512) x 0.2 MHz (n=512~885) | | | | | |
| 2 | Phase Error | RMS < 5 degrees Peak < 20 degrees | | | | | |
| 3 | Frequency Error | < 0.1 ppm | | | | | |
| 4 | Power Level | GSM, EGSM | | | | | |
| | | Level | Power | Toler. | Level | Power | Toler. |
| | | 5 | 33 dBm | ±2dB | 13 | 17 dBm | ±3dB |
| | | 6 | 31 dBm | ±3dB | 14 | 15 dBm | ±3dB |
| | | 7 | 29 dBm | ±3dB | 15 | 13 dBm | ±3dB |
| | | 8 | 27 dBm | ±3dB | 16 | 11 dBm | ±5dB |
| | | 9 | 25 dBm | ±3dB | 17 | 9 dBm | ±5dB |
| | | 10 | 23 dBm | ±3dB | 18 | 7 dBm | ±5dB |
| | | 11 | 21 dBm | ±3dB | 19 | 5 dBm | ±5dB |
| | | 12 | 19 dBm | ±3dB | | | |
| | | DCS | | | | | |
| | | Level | Power | Toler. | Level | Power | Toler. |
| | | 0 | 30 dBm | ±2dB | 8 | 14 dBm | ±3dB |
| | | 1 | 28 dBm | ±3dB | 9 | 12 dBm | ±4dB |
| | | 2 | 26 dBm | ±3dB | 10 | 10 dBm | ±4dB |
| | | 3 | 24 dBm | ±3dB | 11 | 8 dBm | ±4dB |
| | | 4 | 22 dBm | ±3dB | 12 | 6 dBm | ±4dB |
| | | 5 | 20 dBm | ±3dB | 13 | 4 dBm | ±4dB |
| | | 6 | 18 dBm | ±3dB | 14 | 2 dBm | ±5dB |
| | | 7 | 16 dBm | ±3dB | 15 | 0 dBm | ±5dB |

2. PERFORMANCE

| Item | Description | Specification | |
|------|--|----------------------------|------------|
| 5 | Output RF Spectrum (due to modulation) | GSM, EGSM | |
| | | Offset from Carrier (kHz). | Max. dBc |
| | | 100 | +0.5 |
| | | 200 | -30 |
| | | 250 | -33 |
| | | 400 | -60 |
| | | 600 ~ 1,200 | -60 |
| | | 1,200 ~ 1,800 | -60 |
| | | 1,800 ~ 3,000 | -63 |
| | | 3,000 ~ 6,000 | -65 |
| | | 6,000 | -71 |
| | | DCS | |
| | | Offset from Carrier (kHz). | Max. dBc |
| | | 100 | +0.5 |
| | | 200 | -30 |
| | | 250 | -33 |
| | | 400 | -60 |
| | | 600 ~ 1,200 | -60 |
| | | 1,200 ~ 1,800 | -60 |
| | | 1,800 ~ 3,000 | -65 |
| | | 3,000 ~ 6,000 | -65 |
| | | 6,000 | -73 |
| 6 | Output RF Spectrum (due to switching transient) | GSM, EGSM | |
| | | Offset from Carrier (kHz) | Max. (dBm) |
| | | 400 | -19 |
| | | 600 | -21 |
| | | 1,200 | -21 |
| | | 1,800 | -24 |

2. PERFORMANCE

| Item | Description | Specification | | |
|------|--|---|----------|------------|
| 6 | Output RF Spectrum (due to switching transient) | DCS | | |
| | | Offset from Carrier (kHz) | | Max. (dBm) |
| | | 400 | | -22 |
| | | 600 | | -24 |
| | | 1,200 | | -24 |
| | | 1,800 | | -27 |
| 7 | Spurious Emissions | Conduction, Emission Status | | |
| 8 | Bit Error Ratio | GSM, EGSM BER (Class II) < 2.439% @-102dBm DCS BER (Class II) < 2.439% @-100dBm | | |
| 9 | Rx Level Report Accuracy | ±3 dB | | |
| 10 | SLR | 8 ±3 dB | | |
| 11 | Sending Response | Frequency (Hz) | Max.(dB) | Min.(dB) |
| | | 100 | -12 | — |
| | | 200 | 0 | — |
| | | 300 | 0 | -12 |
| | | 1,000 | 0 | -6 |
| | | 2,000 | 4 | -6 |
| | | 3,000 | 4 | -6 |
| | | 3,400 | 4 | -9 |
| | | 4,000 | 0 | — |
| 12 | RLR | 2 ±3 dB | | |
| 13 | Receiving Response | Frequency (Hz) | Max.(dB) | Min.(dB) |
| | | 100 | -12 | — |
| | | 200 | 0 | — |
| | | 300 | 2 | -7 |
| | | 500 | * | -5 |
| | | 1,000 | 0 | -5 |
| | | 3,000 | 2 | -5 |
| | | 3,400 | 2 | -10 |
| | | 4,000 | 2 | |
| | | * Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range. | | |

2. PERFORMANCE

| Item | Description | Specification | |
|------|-------------------------------------|--|---------------------|
| 14 | STMR | 13 ± 5 dB | |
| 15 | Stability Margin | > 6 dB | |
| 16 | Distortion | dB to ARL (dB) | Level Ratio (dB) |
| | | -35 | 17.5 |
| | | -30 | 22.5 |
| | | -20 | 30.7 |
| | | -10 | 33.3 |
| | | 0 | 33.7 |
| | | 7 | 31.7 |
| | | 10 | 25.5 |
| 17 | Side Tone Distortion | Three stage distortion < 10% | |
| 18 | System frequency (13 MHz) tolerance | ≤ 2.5 ppm | |
| 19 | 32.768KHz tolerance | ≤ 30 ppm | |
| 20 | Ringer Volume | At least 65 dBspl under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm | |
| 21 | Charge Current | Fast Charge : < 430 mA Slow Charge: < 160 mA | |
| 22 | Antenna Display | Antenna Bar Number | Power |
| | | 5 | -85 dBm ~ |
| | | 4 | -90 dBm ~ -86 dBm |
| | | 3 | -95 dBm ~ -91 dBm |
| | | 2 | -100 dBm ~ -96 dBm |
| | | 1 | -105 dBm ~ -101 dBm |
| | | 0 | ~ -105 dBm |
| 23 | Battery Indicator | Battery Bar Number | Voltage |
| | | 0 | 3.51V~3.61V |
| | | 1 | 3.62V~3.69V |
| | | 2 | 3.70V~3.77V |
| | | 3 | 3.78V~3.91V |
| | | 4 | 3.92V~ |
| 24 | Low Voltage Warning | 3.62 ± 0.03 V (Call) | |
| | | 3.50 ± 0.03 V (Standby) | |

2. PERFORMANCE

| Item | Description | Specification |
|------|--------------------------|--|
| 25 | Forced shut down Voltage | 3.35 ± 0.03 V |
| 26 | Battery Type | 1 Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 1000mAh |
| 27 | Travel Charger | Switching-mode charger Input: 100 ~ 240 V, 50/60Hz Out put: 5.2V, 800mA |

3. TECHNICAL BRIEF

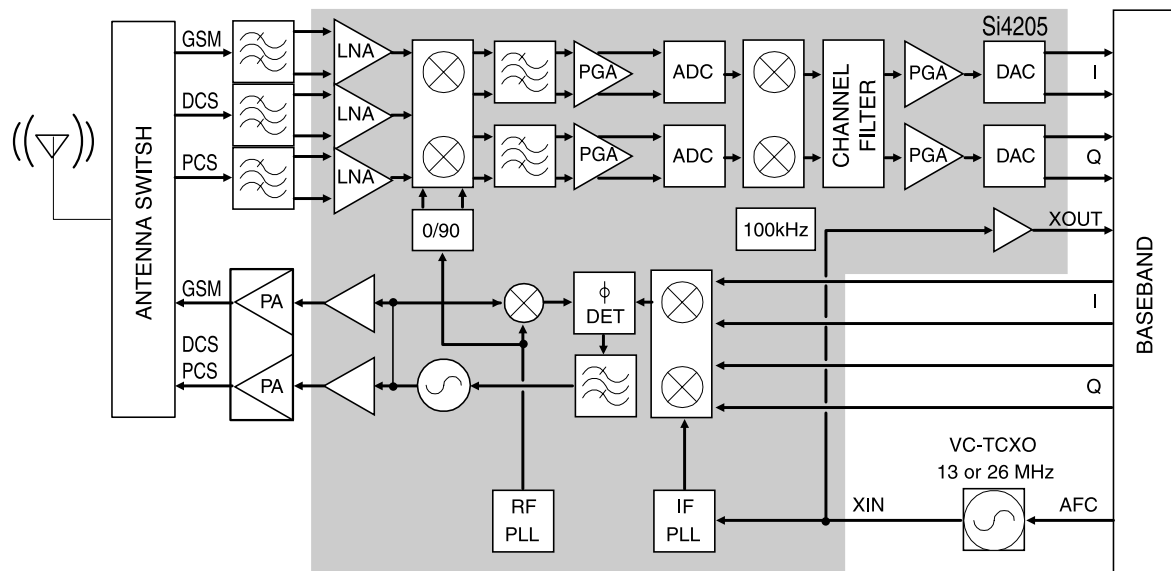
RF PARTS

3.1 Transceiver (SI4205, U505)

The RF parts consist of a transmitter part, a receiver part, a frequency synthesizer part, a voltage supply part, and a VCTCXO part.

The Aero I transceiver is the integrated RF front end for multi-band GSM/GPRS digital cellular handsets and wireless data modems. The integrated solution eliminates the IF SAW filter, external low noise amplifier (LNAs) for three bands, transmit and RF voltage controlled oscillator (VCO modules, and other discrete components found in conventional designs.

Figure. 3-1 RECEIVER FUNCTIONAL BLOCK DIAGRAM



3. TECHNICAL BRIEF

(1) Receiver Part

The Aero I transceiver uses a low-IF receiver architecture which allows for the on chip integration of the channel selection filters, eliminating the external RF image reject filters and the IF SAW filter required in conventional super-heterodyne architectures.

A. RF front end

RF front end consists of Antenna Switch(FL500), two SAW Filters(FL401, FL402) and dual band LNAs integrated in transceiver (U505).

The Received RF signals(GSM 925MHz ~ 960MHz, DCS 1805MHz ~ 1880MHz) are fed into the antenna or Mobile switch.

The Antenna Switch(FL500) is used to control the Rx and Tx paths. And, the input signals VC1 and VC2 of a FL500 are directly connected to baseband controller to switch either Tx or Rx path on.

The logic and current is given below Table 3-1.

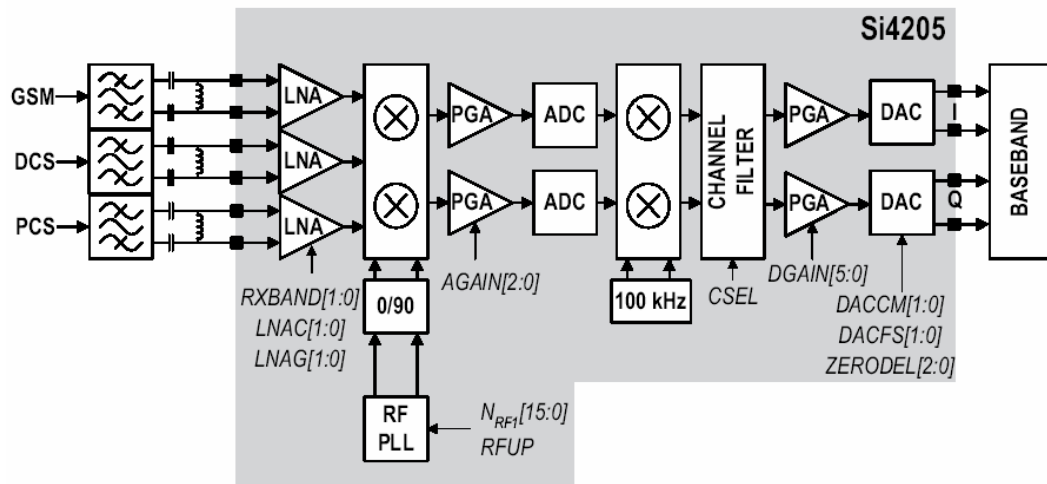
Table 3-1 THE LOGIC AND CURRENT

| | VC1 | VC2 | Current |
|--------------|-------------|-------------|----------------|
| DCS Tx | 0 V | 2.5 ~ 3.0 V | 10.0 mA max |
| GSM Tx | 2.5 ~ 3.0 V | 0 V | 10.0 mA max |
| GSM / DCS Rx | 0 V | 0 V | < 0.1 mA |

Three differential-input LNAs are integrated in SI4205. The GSM input supports the GSM 850 (824-849 MHz) or E-GSM 900 (925-960MHz) bands. The DCS input supports the DCS 1800 (1805-1880 MHz) band. The PCS input supports the PCS 1900 (1930-1990 MHz) band.

The LNA inputs are matched to the 150Ω balanced output SAW filters through external LC matching networks. The LNA gain is controlled with the LNAG[1:0] and LNAC[1:0] bits in register 05h (Figure 3-2).

Figure. 3-2 SI4205 RECEIVER PART

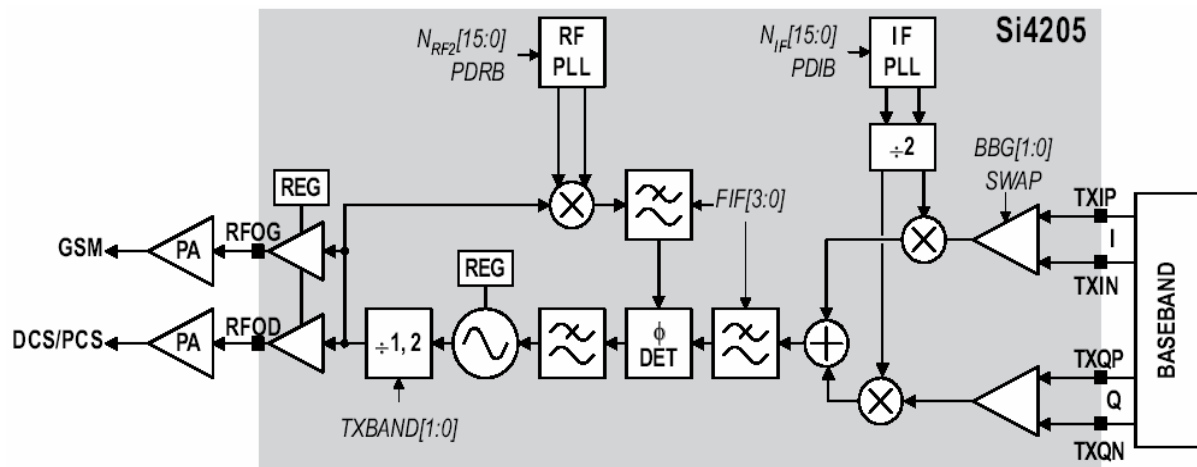


B. Intermediate frequency (IF) and Demodulation

A quadrature image-reject mixer downconverts the RF signal to a 100KHz intermediate frequency (IF) with the RFLO from the frequency synthesizer. The RFLO frequency is between 1737.8 to 1989.9 MHz, and is internally divided by 2 for GSM 850 and E-GSM 900 modes. The mixer output is amplified with an analog programmable gain amplifier (PGA), which is controlled with the AGAIN[2:0] bits in register 05h (Figure3-2). The quadrature IF signal is digitized with high resolution A/D converters (ADCs).

The ADC output is downconverted to baseband with a digital 100KHz quadrature LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. The selectivity setting (CSEL=0) or a low selectivity setting (CSEL=1). The low selectivity filter has a flatter group channelization filter is in the baseband chip. After channel selection, the digital output is scaled with a digital PGA, which is controlled with the DGAIN [5:0] bits in register 05h. The amplified digital output signal go through with DACs that drive a differential analog signal onto the RXIP,RXIN,RXQP and RXQN pins to interface to standard analog ADC input baseband ICs. No special processing is required in the baseband for offset compensation or extended dynamic range. Compared to a direct-conversion architecture, the low-IF architecture has a much greater degree of immunity to dc offsets that can arise from RF local oscillator(RFLO) self-mixing, 2nd order distortion of blockers, and device 1/f noise.

The transmit (Tx) section consists of an I/Q baseband upconverter, and offset phase-locked loop (OPLL) and two output buffers that can drive external power amplifiers (PA), one for the GSM 850 (824-849 MHz) and E-GSM 900 (880-915 MHz) bands and one for the DCS 1800 (1710-1785 MHz) and PCS 1900 (1850-1910MHz) bands.



The baseband converter(BBC) within the GSM chipset generates I and Q baseband signals for the Transmit vector modulator. The modulator provides more than 40dBc of carrier and unwanted sideband rejection and produces a GMSK modulated signal. The baseband software is able to cancel out differential DC offsets in the I/Q baseband signals caused by imperfections in the D/A converters. The Tx-Modulator implements a quadrature modulator. A quadrature mixer upconverts the differential in-phase (TXIP, TXIN) and quadrature (TXQP, TXQN) signals with the IFLO to generate a SSB IF signal that is filtered and used as the reference input to the OPPLL.

The IFLO frequency is generated between 766 and 896 MHz and internally divided by 2 to generate the quadrature LO signals for the quadrature modulator, resulting in an IF between 383 and 448 MHz. For the E-GSM 900 band, two different IFLO frequencies are required for spur management. Therefore, the IF PLL must be programmed per channel in the E-GSM 900 band.

B. OPLL

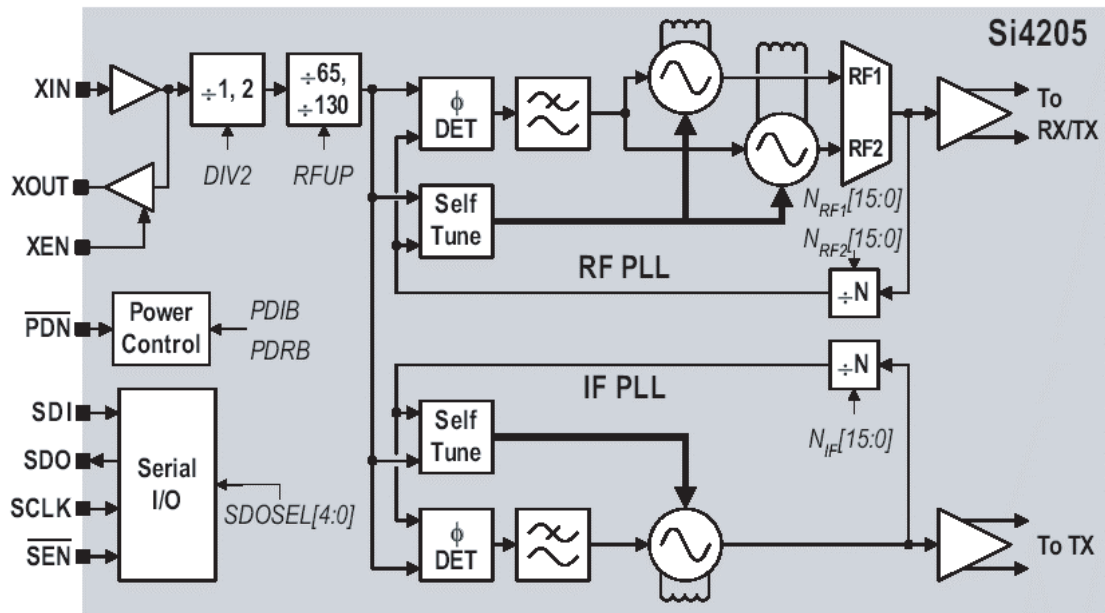
The OPLL consists of a feedback mixer, a phase detector, a loop filter, and a fully integrated TXVCO. The TXVCO is centered between the DCS 1800 and PCS 1900 bands, and its output is divided by 2 for the GSM 850 and E-GSM 900 bands. The RFLO frequency is generated between 1272 and 1483 MHz. To allow a single VCO to be used for the RFLO, high-side injection is used for the GSM 850 and E-GSM 900 bands, and low-side injection is used for the DCS 1800 and PCS 1900 bands. The I and Q signals are automatically swapped when switching bands. Additionally, the SWAP bit in register 03h can be used to manually exchange the I and Q signals.

Low-pass filters before the OPLL phase detector reduce the harmonic content of the quadrature modulator and feedback mixer outputs. The cutoff frequency of the filters is programmable with the FIF[3:0] bits in register 04h (Figure 3-3), and should be set to the recommended settings detailed in the register description.

3. TECHNICAL BRIEF

(3) Frequency Synthesizer

Figure. 3-4 SI4205 FREQUENCY SYNTHESIZER PART



The Aero I transceiver integrates two complete PLLs including VCOs, varactors, resonators, loop filters, reference and VCO dividers, and phase detectors. The RF PLL uses two multiplexed VCOs. The RF1 VCO is used for receive mode, and the RF2 VCO is used for transmit mode. The IF PLL is used only during transmit mode. All VCO tuning inductors are also integrated. The IF and RF output frequencies are set by programming the N-Divider registers, N_{RF1} , N_{RF2} and N_{IF} . Programming the N-Divider register for either RF1 or RF2 automatically selects the proper VCO. The output frequency of each PLL is as follows:

$$f_{out} = N \times f_0$$

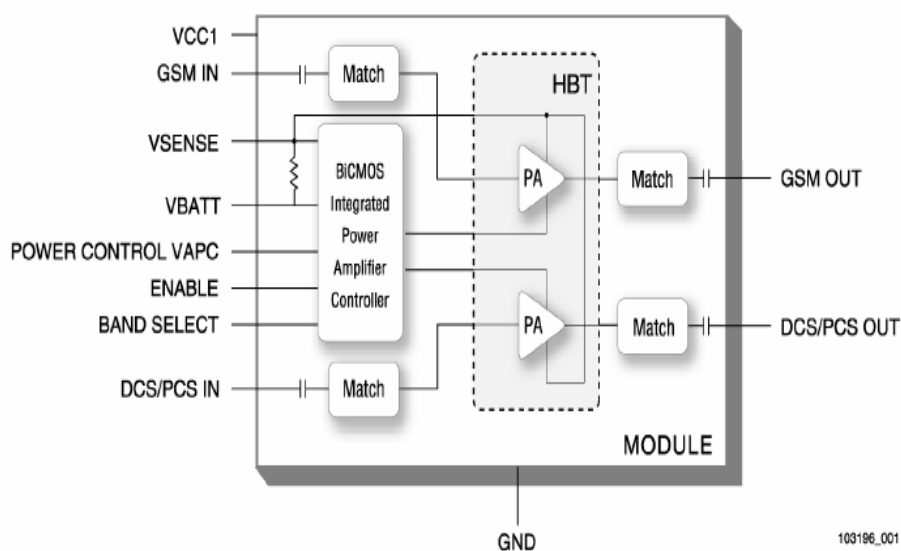
The DIV2 bit in register 31h controls a programmable divider at the XIN pin to allow either a 13 or 26 MHz reference frequency. For receive mode, the RF1 PLL phase detector update rate (f_0) should be programmed $f_0 = 100$ kHz for DCS 1800 or PCS 1900 bands, and $f_0 = 200$ kHz for GSM 850 and E-GSM 900 bands. For transmit mode, the RF2 and IF PLL phase detector update rates are always $f_0 = 200$ kHz.

3.2 Power Amplifier Module (SKY77325, U501)

The SKY77325 Power Amplifier Module (PAM) is designed in a low profile (1.2 mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation. The PAM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation. The module consists of separate GSM850/900 PA and DCS1800/PCS1900 PA blocks, impedance-matching circuitry for 50 Ω input and output impedances, and a Power Amplifier Control (PAC) block with an internal current-sense resistor. The custom BiCMOS integrated circuit provides the internal PAC function and interface circuitry. Fabricated onto a single Gallium Arsenide (GaAs) die, one Heterojunction Bipolar Transistor (HBT) PA block supports the GSM850/900 bands and the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The GaAs die, the Silicon (Si) die, and the passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

RF input and output ports of the SKY77325 are internally matched to a 50 Ω load to reduce the number of external components for a quad-band design. Extremely low leakage current (2.5 μ A, typical) of the dual PA module maximizes handset standby time. The SKY77325 also contains band-select switching circuitry to select GSM (logic 0) or DCS/PCS (logic 1) as determined from the Band Select (BS) signal. In Figure 3-5 below, the BS pin selects the PA output (DCS/PCS OUT or GSM850/900 OUT) and the Analog Power Control (VAPC) controls the level of output power. VBATT and VSENSE pins connect to an internal current-sense resistor and interface to an integrated power amplifier control (iPAC™) function, which is insensitive to variations in temperature, power supply, process, and input power. The ENABLE input allows initial turnon of PAM circuitry to minimize battery drain

Figure. 3-5 Functional Block Diagram



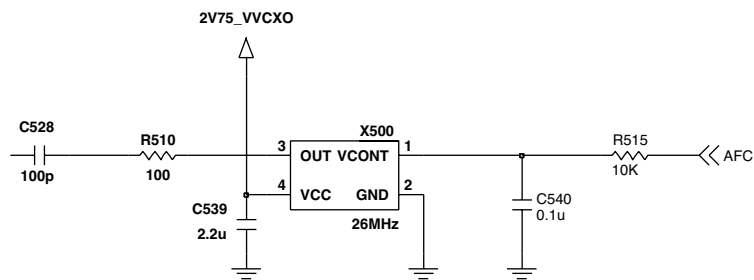
103196_001

3. TECHNICAL BRIEF

3.3 26 MHz Clock (VCTCXO, X500)

The 26 MHz clock(X500) consists of a TCXO(Temperature Compensated Crystal Oscillator) which oscillates at a frequency of 26 MHz. It is used within the Si4205, digital base band chipset (U101, AD6527)

Figure 3-6 VCTCXO CIRCUIT DIAGRAM



3.4 Power Supplies for RF Circuits (RF LDO, U503)

Two regulators are used for RF circuits. One is MIC5255 (U503), and the other is one port of AD6537B (U102).

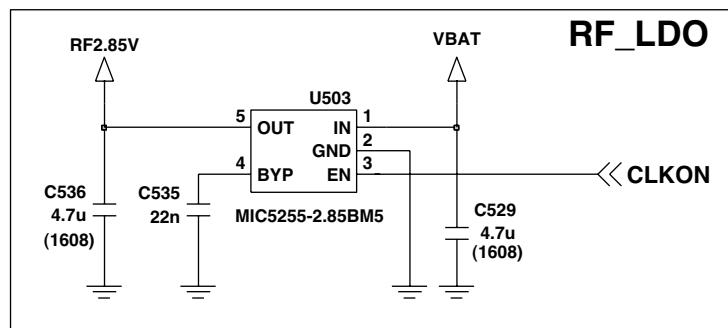
MIC5255 (U503) supplies power to transceiver (SI4205, U505). One port of AD6537B supplies power to VCTCXO (X500). Main power (VBAT) from battery is used for PAM (SKY77325, U501) because PAM requires high power.

Table 3-2 RF POWER SUPPLIERS

| Supplier | Voltage | Powers | enabled signal |
|---------------|-------------|------------|----------------|
| U503(VRF) | 2.85 V | U505, U501 | CLKON |
| U102(VVCXO) | 2.75 V | X501 | |
| Battery(VBAT) | 3.4 ~ 4.2 V | U501, U503 | |

RF PARTS

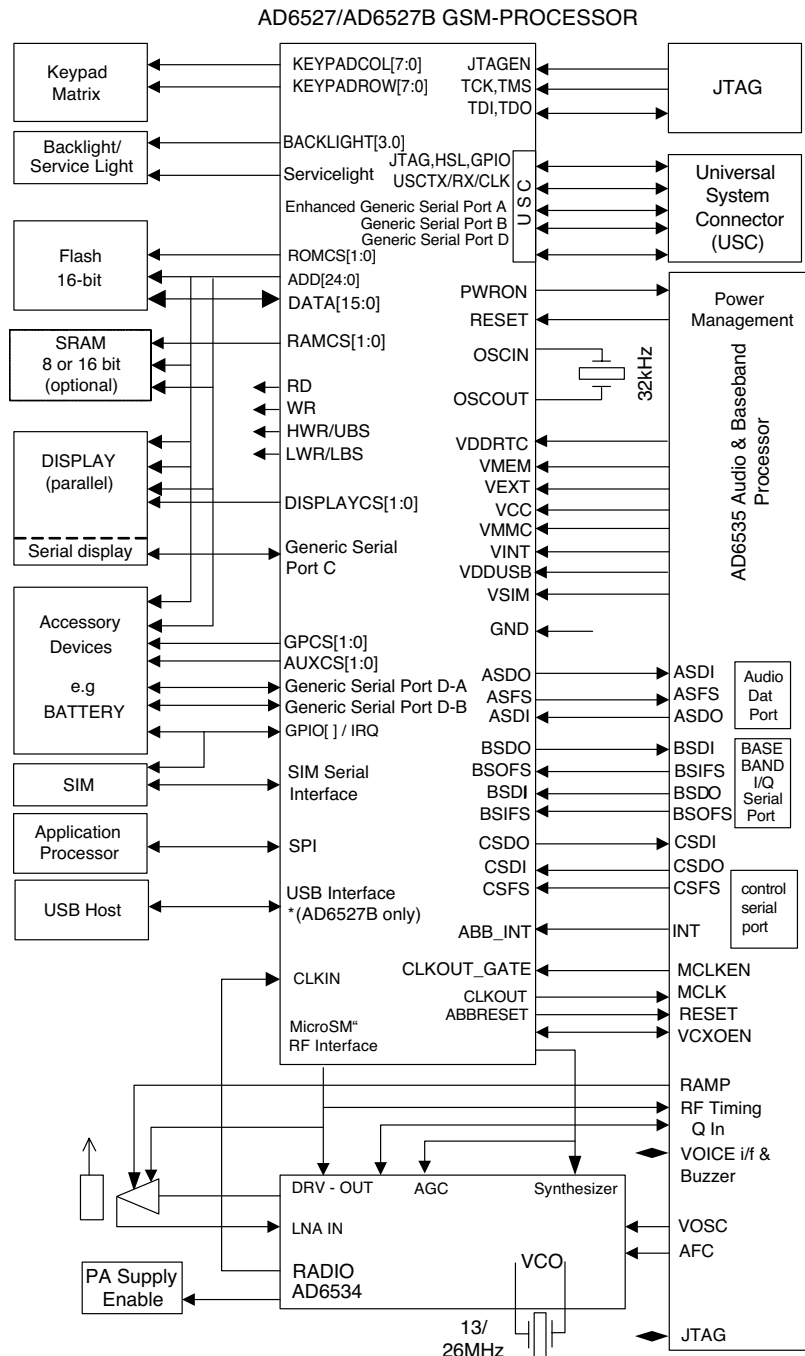
Figure 3-7 RF LDO CIRCUIT DIAGRAM



BASEBAND PARTS

3.5 Digital Main Processor (AD6527, U101)

Figure 3-8. SYSTEM INTERCONNECTION OF AD6527 EXTERNAL INTERFACE



3. TECHNICAL BRIEF

- AD6527 is an ADI designed processor.
- AD6527 consists of
 1. Control Processor Subsystem
 - 32-bit ARM7TDMI Control Processor
 - 58.5 MHz operation at 1.7V
 - On-board 16KB instruction/Data Cache
 - 1 Mbits of on-chip System SRAM
 2. DSP Subsystem
 - 16-bit Fixed Point DSP Processor
 - 91 MIPS at 1.7V
 - 16K word Data and 16K word Program SRAM
 - 4K word Program Instruction Cache
 - Architecture supports Full Rate, Enhanced Full Rate, Half Rate, and AMR Speech Encoding/Decoding Algorithms
 3. Peripheral Subsystem
 - Shared on-chip peripheral and off-chip interface:
 - Support for Burst and Page Mode Flash
 - Support for Pseudo SRAM
 - Ciphering module for GPRS supporting GAE1 and GAE2 encryption algorithms
 - Parallel and Serial Display Interface
 - 8 x 8 Keypad Interface
 - Four independent programmable backlight plus One Service Light
 - 1.8V and 3.0V, 64 kbps SIM interface
 - Universal System Connector Interface
 - Slow, Medium and Fast IrDA transceiver interface
 - Enhanced Generic Serial Port
 - Dedicated SPI interface
 - Thumbwheel Interface
 - JTAG Interface for Test and In-Circuit Emulation
 4. Other
 - Supports 13 MHz and 26 MHz Input Clocks
 - 1.8V Typical Core Operating Voltages
 - 204-Ball LFBGA(mini-BGA) Package
 5. Applications
 - GSM900/DCS1800/PCS1900/PCS850 Wireless Terminals
 - GSM Phase 2+ Compliant
 - GPRS Class 12 Compliant
 - Multimedia Services(MMS)
 - Extended Messaging System(EMS)

3.5.1 Interconnection with external devices

A. RTC block interface

Countered by external X-TAL

The X-TAL oscillates 32.768KHz

B. LCD module interface

The LCD module is controlled by DBB chipset, AD6527.

When LCD operate, the AD6527 controls the LCD module through _LCD_CS (L_MAIN_LCD_CS), _SUB_CS (L_SUB_LCD_CS), LCD_RESET, ADD01(LCD_RS), _WR(LCD_WR), _RD(LCD_RD), L_DATA[15-00], 2V85_VCAM, IF_MODE, LCD_ID[1:3].

Table 3-3. LCD CONTRON SIGNALS DISCRIPTION

| Signals | Description |
|--------------------------------------|---|
| _LCD_CS | MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin |
| _SUB_CS | SUB LCD driver chip enable. SUB LCD driver IC has own CS pin |
| LCD_RESET (GPIO 15) | This pin resets LCD module. This signal comes from DBB directly. |
| _WR | Enable writing to LCD Driver. |
| _RD | Enable reading to LCD Driver. |
| ADD01 | This pin determines whether the data to LCD module are display data or control data. LCD_RS can select 16 bit parallel bus. |
| 2V85_VCAM | 2.85V voltage is supplied to LCD driver IC. |
| IFMODE (GPO_8) | Select 16bits or 8bits interface mode for MAIN LCD. For the future |
| LCD_ID1 (AUXADC1 in ABB) | Select LCD modoule maker(2.4V : SII, 0V : HyeLCD) |
| LCD_ID2(GPIO_16) LCD_ID3(GPIO_17) | For the future. |

3. TECHNICAL BRIEF

The backlight of LCD module is controlled by DBB via AAT2807, U402. The control signals related to Backlight LED are given below.

Table 3-4. DESCRIPTION OF LCD BACKLIGHT LED CONTROL

| Signals | Description |
|-------------------------|--|
| C_FLASH (GPIO_24) | Control flash ON and OFF |
| LCD_DIM_CTL (GPO 23) | Control LCD backlight level in 16 steps |
| FLASH_LED | Voltage source for FLASH LED |
| MLED | Current source for backlight LED |
| MLED[1:3] | This pins are returned-paths for backlight LED current source (MLED) |

C. RF interface

The AD6527 control RF parts through PA_BAND, ANT_SW1, ANT_SW2, CLKON , PA_EN, S_EN, S_DATA, S_CLK, RF_PWR_DWN.

Table 3-5. RF CONTRON SIGNALS DISCRIPTION

| Signals | Description |
|--------------------|----------------------------|
| PA_BAND (GPO 17) | PAM Band Select |
| ANT_SW1 (GPO 9) | Antenna switch Band Select |
| ANT_SW2 (GPO 11) | Antenna switch Band Select |
| CLKON | RF LDO Enable/Disable |
| PA_EN (GPO 16) | PAM Enable/Disable |
| S_EN (GPO 19) | PLL Enable/Disable |
| S_DATA (GPO 20) | Serial Data to PLL |
| S_CLK (GPO 21) | Clock to PLL |
| RF_PWR_DWN (GPO 4) | Tranceiver on/off control |

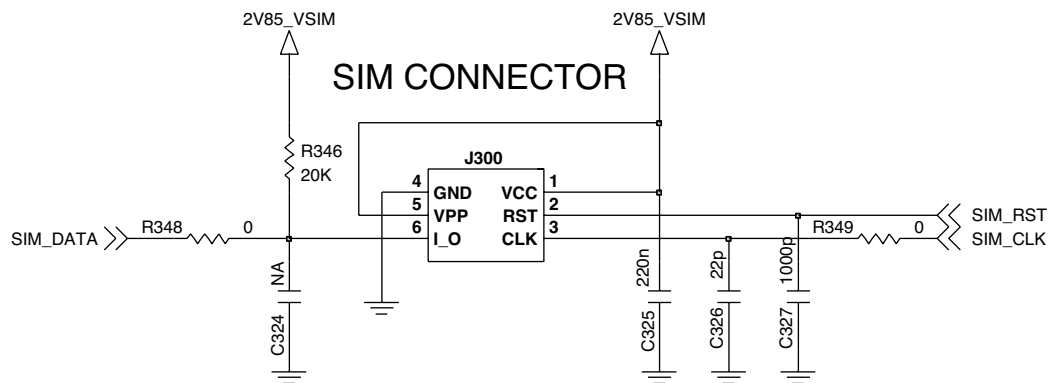
D. SIM interface

The AD6527 provides SIM Interface Module. The AD6527 checks status periodically during established call mode whether SIM card is inserted or not, but it doesn't check during deep Sleep mode. In order to communicate with SIM card, 3 signals SIM_DATA, SIM_CLK, SIM_RST(GPIO_23) are required. The descriptions about the signals are given by bellow Table 3-6 in detail.

Table 3-6. SIM CONTROL SIGNALS DISCRIPTION

| Signals | Description |
|----------------------|---|
| SIM_DATA | This pin receives and sends data to SIM card. This model can support 3.0 volt interface SIM card. |
| SIM_CLK | Clock 3.25MHz frequency. |
| SIM_RST (GPIO_23) | Reset SIM block |

Figure 3-9. SIM Interface of AD6527



E. Key interface

Include 5 columns, 5 rows and additional GPIO 35 for KEY_ROW5. The AD6527 detects whether key is pressed or not by using interrupt method.

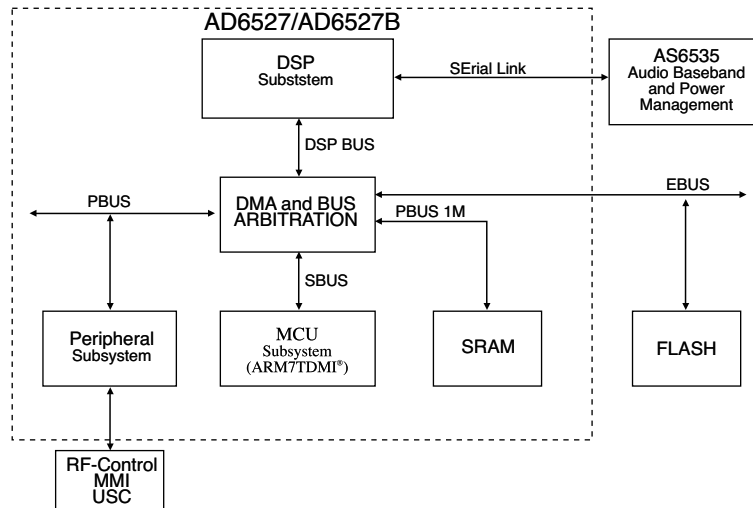
F. AD6537B Interrupt

AD6537B provides an active-high interrupt output signal. Interrupt signals are generated by the Auxiliary ADC, audio, and charger modules.

3. TECHNICAL BRIEF

3.5.2 AD6527 Architecture

Figure 3-10. AD6527 Architecture



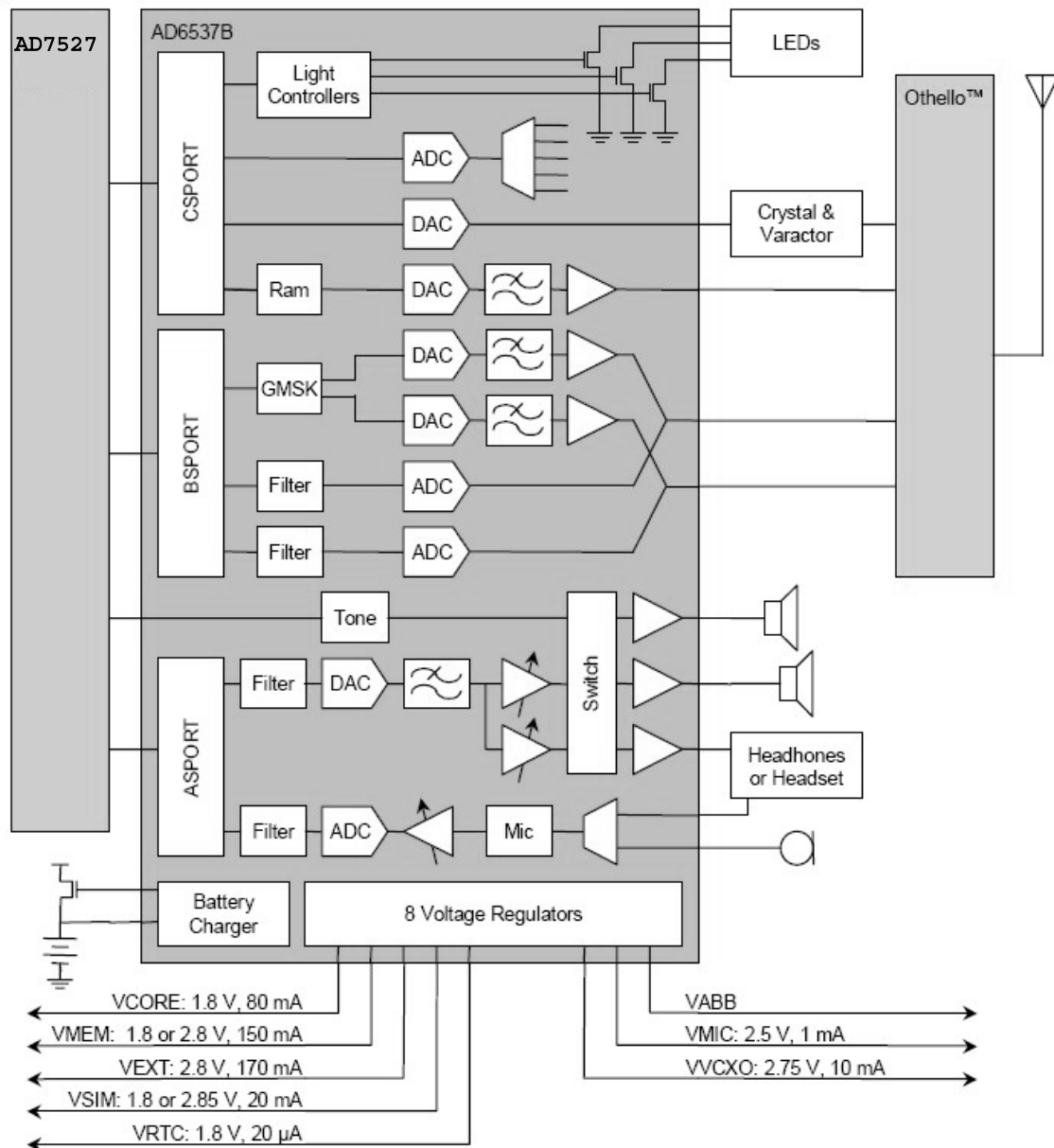
The internal architecture of AD6527 is shown above Figure 3-10. AD6527 regroups three main subsystems connected together through a dynamic and flexible communication bus network. It also includes onboard system RAM (SRAM) and interfaces with external Flash Memory, Baseband converter functions, and terminal functions like MMI, SIM and Universal System Connector (USC). The Digital Signal Processing (DSP) subsystem primarily hosts all the speech processing, channel equalization and channel codec functions. The code used to implement such functions can be stored in external Flash Memory and dynamically downloaded on demand into the DSP's program RAM and Instruction Cache.

The micro-controller subsystem supports all the GSM terminal software, including the layer 1, 2 and 3 of the GSM protocol stack, the MMI, and applications software such as data services, test and maintenance. It is tightly associated with on-chip system SRAM and also includes boot ROM memory with a small dedicated routine to facilitate the initialization of the external Flash Memory via code download using the on-chip serial interface to the external Flash Memory interface.

The peripheral subsystem is composed of system peripherals such as interrupt controller, real time clock, watch dog timer, power management and a timing and control module. It also includes peripheral interfaces to the terminal functions: keyboard, battery supervision, radio and display. Both the DSP and the MCU can access the peripheral subsystem via the peripheral bus (PBUS). For program and data storage, both the MCU subsystem and the DSP subsystem can access the on chip system SRAM and external memory such Flash Memory. The access to the SRAM module is made through the RAM Bus (RBUS) under the control of the bus arbitration logic. Similarly, access to the Flash Memory is through the parallel External Bus (EBUS).

3.6 Analog Main & Power Management Processor (AD6537B, U102)

Figure 3-11. AD6537B FUNCTIONAL BLOCK DIAGRAM



3. TECHNICAL BRIEF

- AD6537B is an ADI designed Analog Baseband processor. AD6537B covers the processing GMSK modulation interface, Aux ADC, Voice signal processing and Power Management.

- AD6537B consists of

1. BB Transmit section

- GMSK Modulation
- I-channel & Q-channel Transmit DACs and Filters
- Power Ramping DAC

2. BB Receiver section

- I-channel & Q-channel Receive ADCs and Filters

3. Auxiliary section

- Voltage Reference
- Automatic Frequency Control DAC
- Auxiliary ADC
- Light Controllers

4. Audio Section

- 8 kHz & 16 kHz Voiceband Codec
- 48 kHz Monophonic DAC
- Audio Amplifiers

5. Power Management section

- Voltage Regulators
- Battery Charger
- Battery Protection

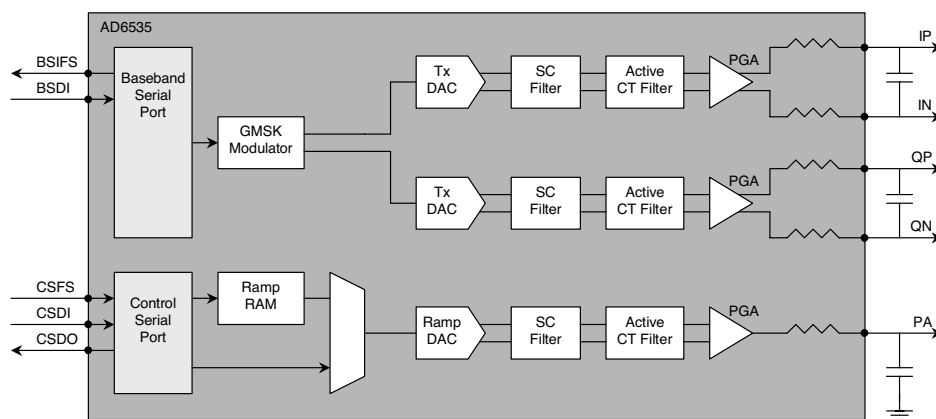
6. Digital Processor interface section

- Control, Baseband, and Audio Serial Ports
- Interrupt Logic

3.6.1 Baseband Transmit Section

1. The AD6537B Baseband Transmit Section is designed to support GMSK for both single-slot and multi-slot application.
2. The transmit channel consists of a digital GMSK modulator, a matched pair of 10-bit DACs and a matched pair of reconstruction filter.

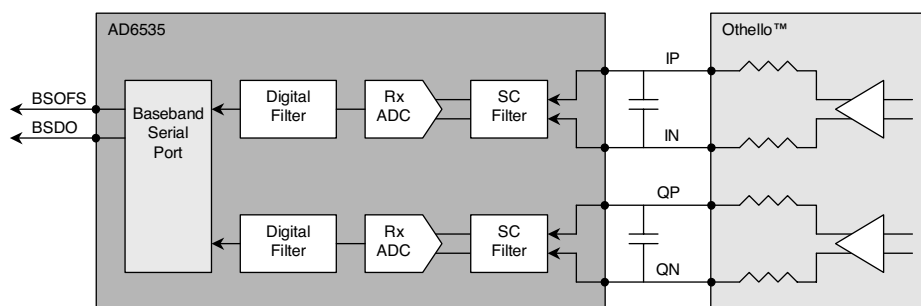
Figure 3-12. AD6537B BASEBAND TRANSMIT SECTION



3.6.2 Baseband Receiver Section

1. This section consists of two identical ADC channels that process baseband in-phase(I) and quadrature(Q) input signals.

Figure 3-13. AD6537B BASEBAND RECEIVER SECTION

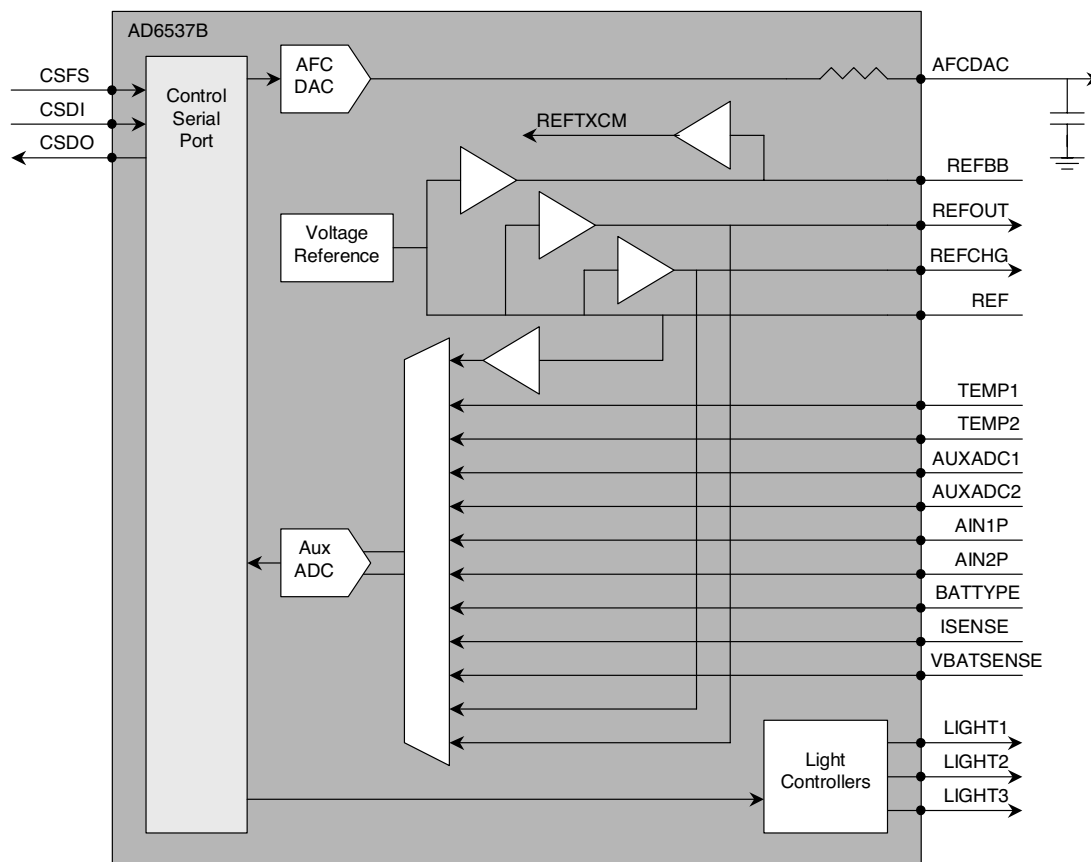


3. TECHNICAL BRIEF

3.6.3 Auxiliary Section

1. This section includes an Automatic Frequency Control(AFC) DAC, voltage reference buffers, an Auxiliary ADC, and light controllers.
 - AFC DAC: 13 bits
2. This section also contains AUX ADC and Voltage Reference
 - IDAC: 10 bits
 - The Auxiliary ADC provides :
 - Two differential inputs for temperature sensing.
 - A differential input for the battery charger current sensor

Figure 3-14. AD6537B AUXILIARY SECTION



3.6.4 Audio Section

1. Receive audio signal from microphone. This model uses differential configuration.
2. Send audio signal to speaker. This model uses differential configuration.
3. This section provides an audio codec with a digital-to-analog converter and an analog-to-digital converter, a ring tone volume controller, a microphone interface, and multiple analog input and output channels.
4. It interconnects with external devices like main microphone, main speaker, and headset. The descriptions of audio port used in this model are given below in detail.

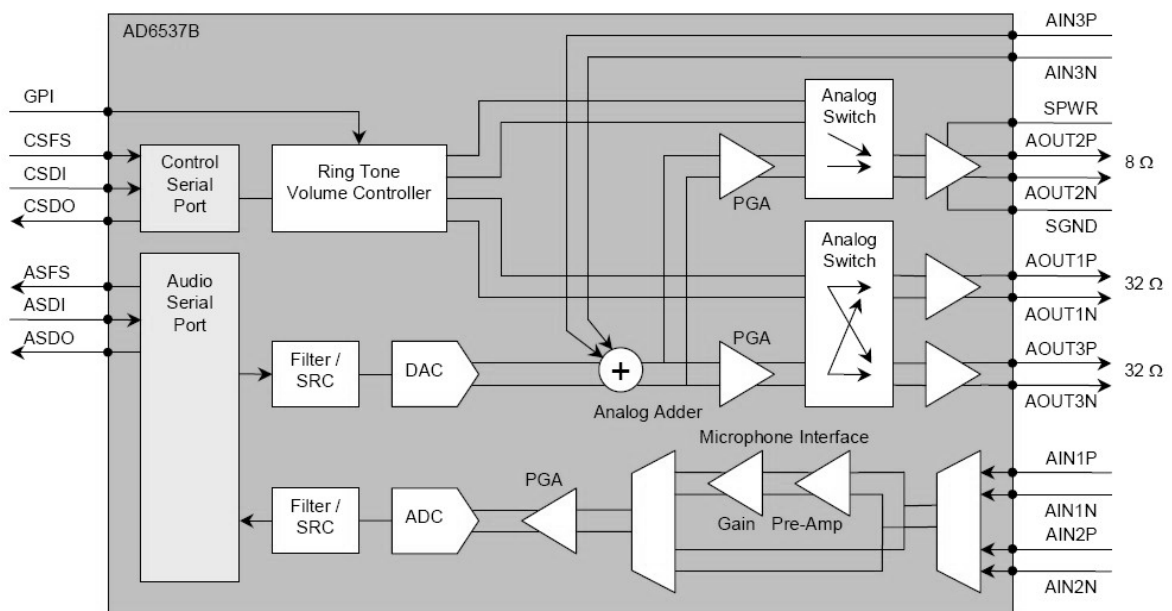
<Up Link>

- AIN1P,AIN1N : Main microphone positive/negative terminal
- AIN2P,AIN2N : Headset microphone positive/negative terminal
- AIN3P,AIN3N : External Analog Input terminal

<Down Link>

- AOUT1P,AOUT1N : Main Speaker positive/negative terminal
- AOUT3P : Headset speaker terminal

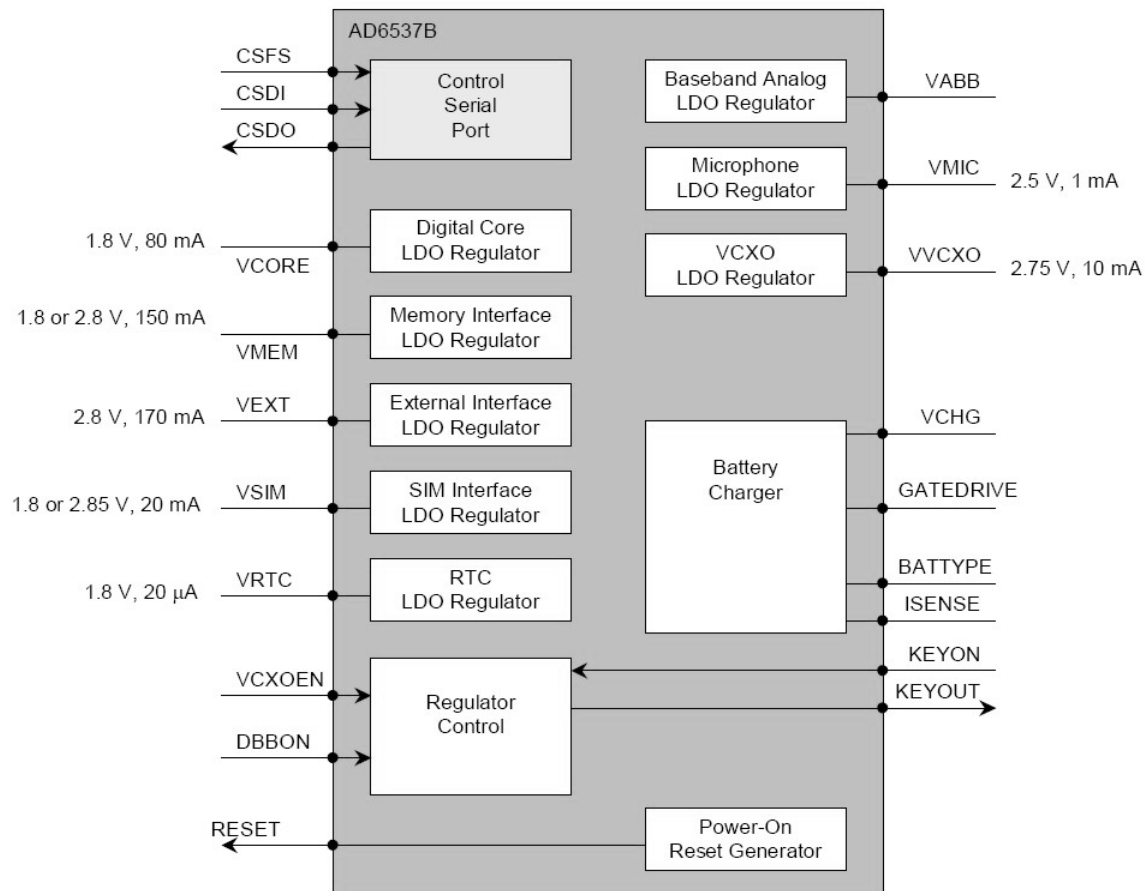
Figure 3-15. AD6537B AUDIO SECTION



3. TECHNICAL BRIEF

3.6.5 Power Management

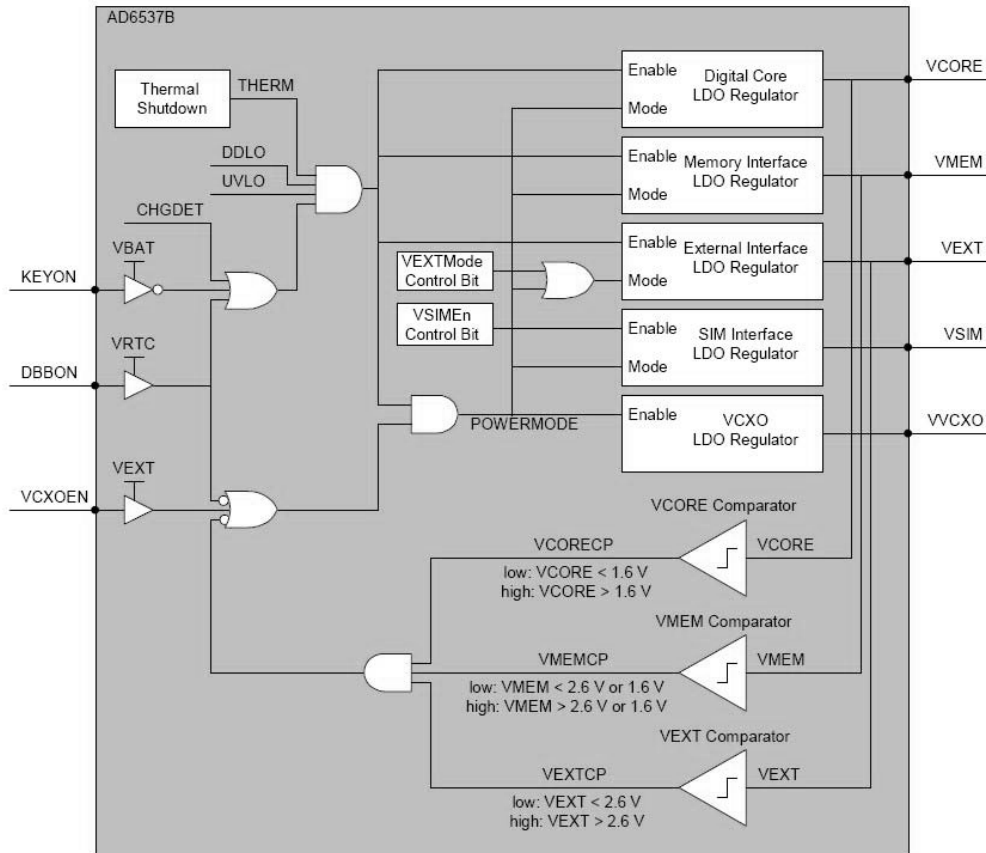
Figure 3-16. AD6537B POWER MANAGEMENT SECTION



1. Power up sequence logic

1. The AD6537B controls power on sequence
2. Power on sequence
 - If a battery is inserted, the battery powers the 8 LDOs.
 - Then if PWRONKEY is detected, the LDOs output turn on.
 - REFOUT is also enabled
 - Reset signal is generated and send to the AD6527

Figure 3-17. AD6537B POWER MODE LOGIC



2. LDO Block

1. There are 8 LDOs in the AD6537B.

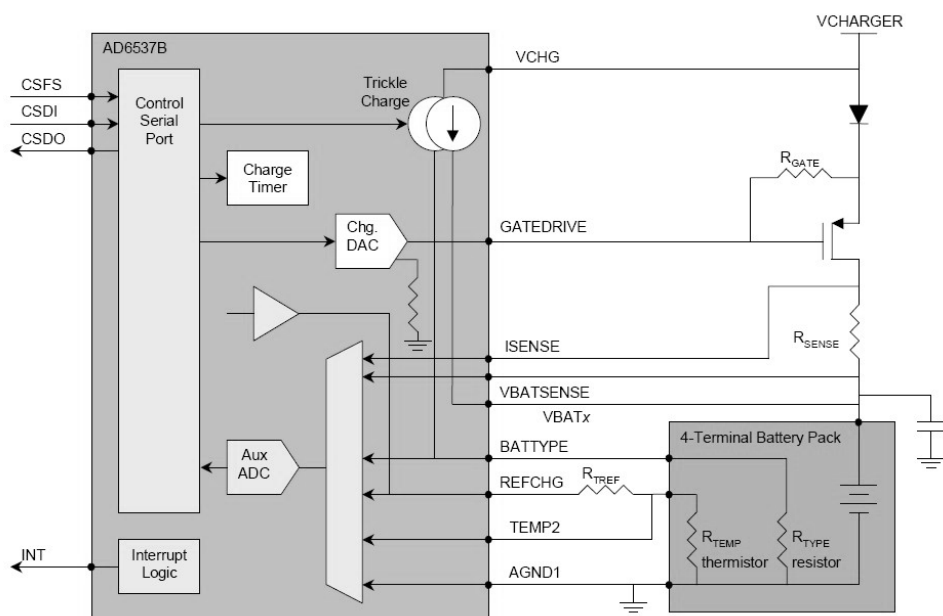
- V_{CORE} : supplies Digital baseband Processor core and AD6537B digital core (1.8V, 80mA)
- V_{MEM} : supplies external memory and the interface to the external memory on the digital baseband processor (1.8V or 2.8V, 150mA)
- V_{EXT} : supplies Radio digital interface and high voltage interface (2.8V, 170mA)
- V_{SIM} : supplies the SIM interface circuitry on the digital processor and SIM card (1.8V or 2.85V, 20mA)
- V_{RTC} : supplies the Real-Time Clock module (1.8 V, 20 μ A)
- V_{ABB} : supplies the analog portions of the AD6537B
- V_{MIC} : supplies the microphone interface circuitry (2.5 V, 1 mA)
- V_{VCXO} : supplies the voltage controlled crystal oscillator (2.75 V, 10 mA)

3. TECHNICAL BRIEF

3. Battery Charging Block

1. It can be used to charge Lithium Ion and/or Nickel Metal Hydride batteries.
Charger initialization, trickle charging, and Li-Ion charging control are implemented in hardware.
2. Charging Process
 - Check charger is inserted or not
 - If AD6537B detects that Charger is inserted, the CC-CV charging starts.
 - Exception : When battery voltage is lower than 3.2V, the precharge(low current charge mode) starts firstly.
 - And the battery voltage reach to 3.2V the CC-CV charging starts.
3. Pins used for charging
 - VCHG : charger supply.
 - GATEDRIVE : charge DAC output
 - ISENSE : charge current sense input
 - VBATSENSE : battery voltage sense input.
 - BATTYPE : battery type identification input
 - REFCHG : voltage reference output
4. TA (Travel Adaptor)
 - Input voltage: AC 85V ~ 260V, 50~60Hz
 - Output voltage: DC 5.2V (0.2 V)
 - Output current: Max 800mA (50mA)
5. Battery
 - Li-ion battery (Max 4.2V, Nom 3.7V)
 - Standard battery: Capacity - 1000mAh

Figure 3-18. AD6537B BATTERY CHARGING BLOCK



3. TECHNICAL BRIEF

Figure 3-19. C2100 HEADSET AUDIO CIRCUIT (AD6537B)

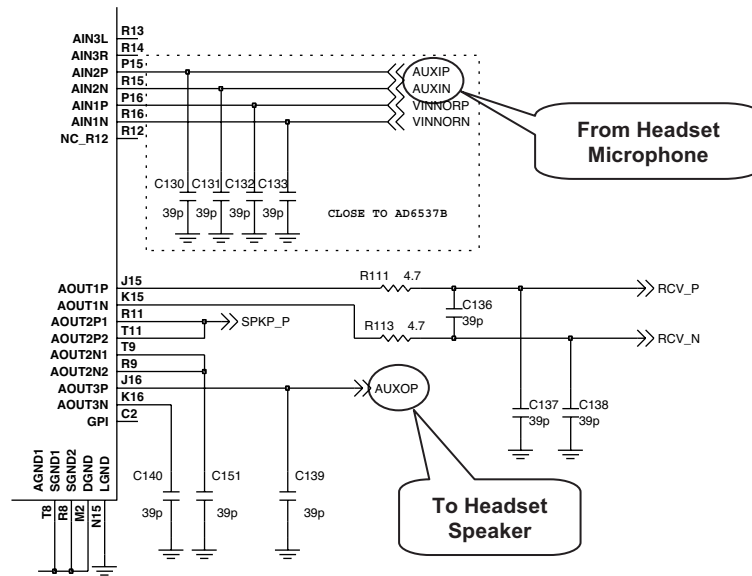


Figure 3-20. C2100 MAIN AUDIO CIRCUIT (AD6537B)

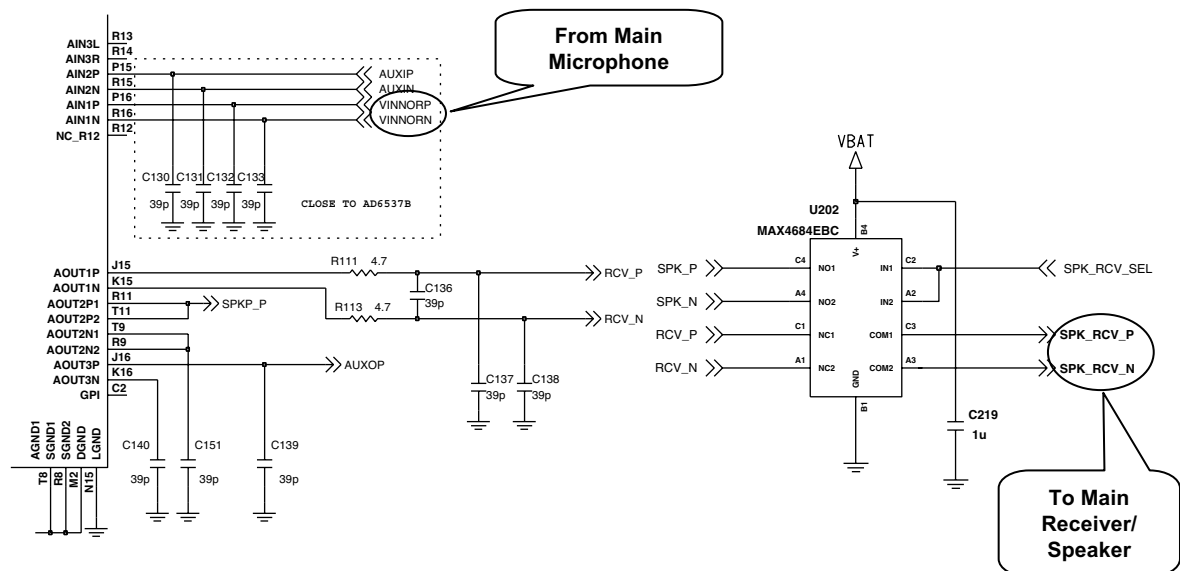
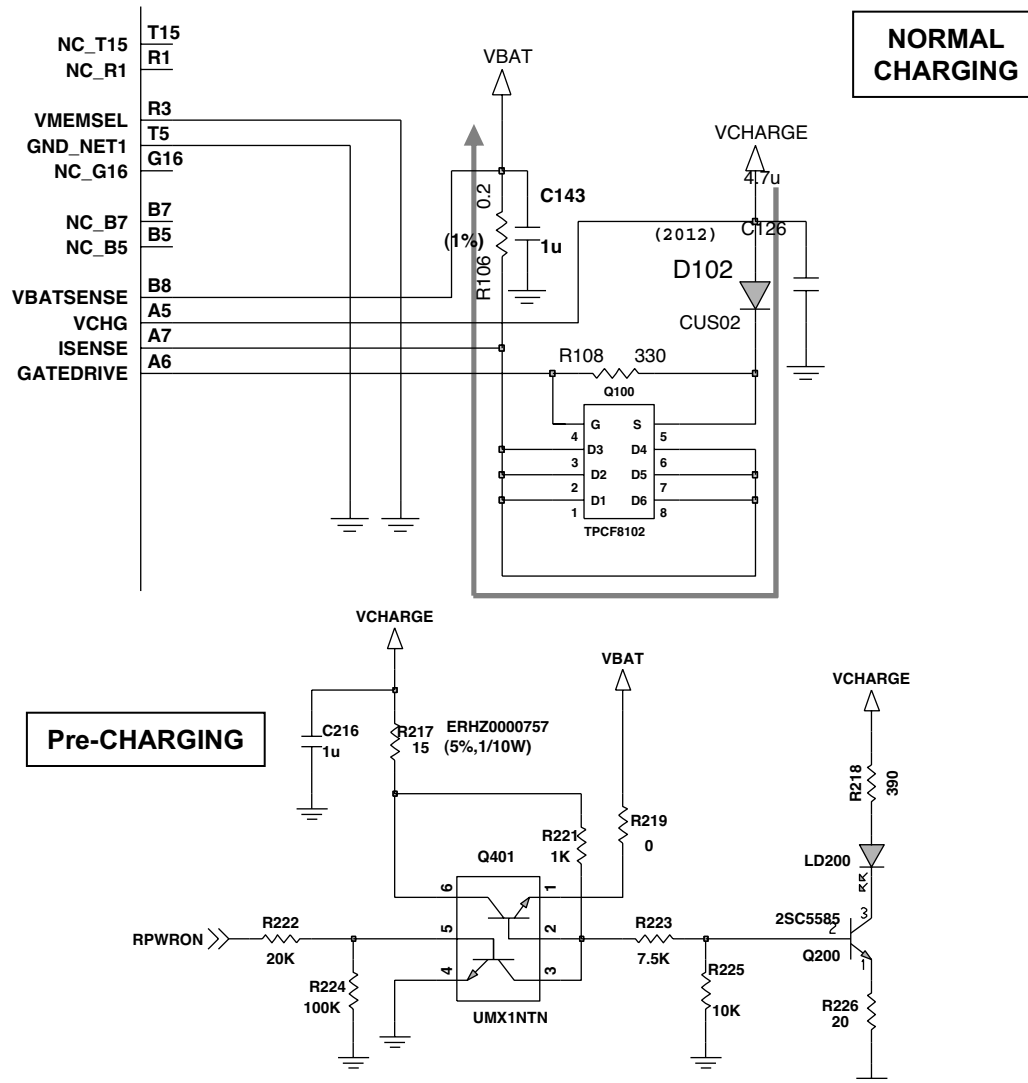


Figure 3-21. CIRCUIT FOR BATTERY CHARGING AT AD6537B



In order to reduce time for trickle charging, additional circuit(Pre-charge circuit) was included. This circuit has supplied Max 160mA current into the battery additionally. So call it, it reduce trickle charging time

3.7 Display and Interface

• Main LCD

| Properties | Spec. | Unit |
|--------------------|----------------------|--------|
| Active Screen Size | 28.022(H) X 35.03(V) | mm |
| Color Depth | 65,000 | colors |
| Resolution | 128 X RGB X 160 | dots |
| Pixel Size | 0.063(H) X 0.209(V) | mm |

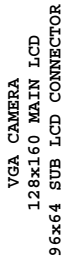
• Sub LCD

| Properties | Spec. | Unit |
|--------------------|----------------------|------|
| Active Screen Size | 18.902(H) X 13.43(V) | mm |
| Color Depth | Mono | |
| Resolution | 96 X 64 | dots |
| Pixel Size | 0.187(H) X 0.2(V) | mm |

Controlled by _LCD_CS(L_MAIN_LCD_CS), LCD_RESET, ADD01(LCD_RS), _WR(LCD_WR), _RD(LCD_RD), IFMODE, DATA[00:15](L_DATA[00:15]) ports

- _LCD_CS : MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
- LCD_RESET : This pin resets LCD module. This signal comes from DBB directly.
- ADD01: This pin determines whether the data to LCD module are display data or control data.
- IFMODE : This can select 16bits or 8bits parallel bus. But for the future.
Default is low (low is 16bits interface)
- _WR : Write control Signal
- _RD : Read control Signal. But this pin used only for debugging.
- DATA[00:15] : Parallel data lines.
- LCD_ID[1:2] : LCD type selection signals
 - LCD_ID1 : LCD maker(2.4V is SII, 0V is HyeLCD)
 - LCD_ID[2:3] : for the future using
- For using 65K color, data buses should be 16 bits.

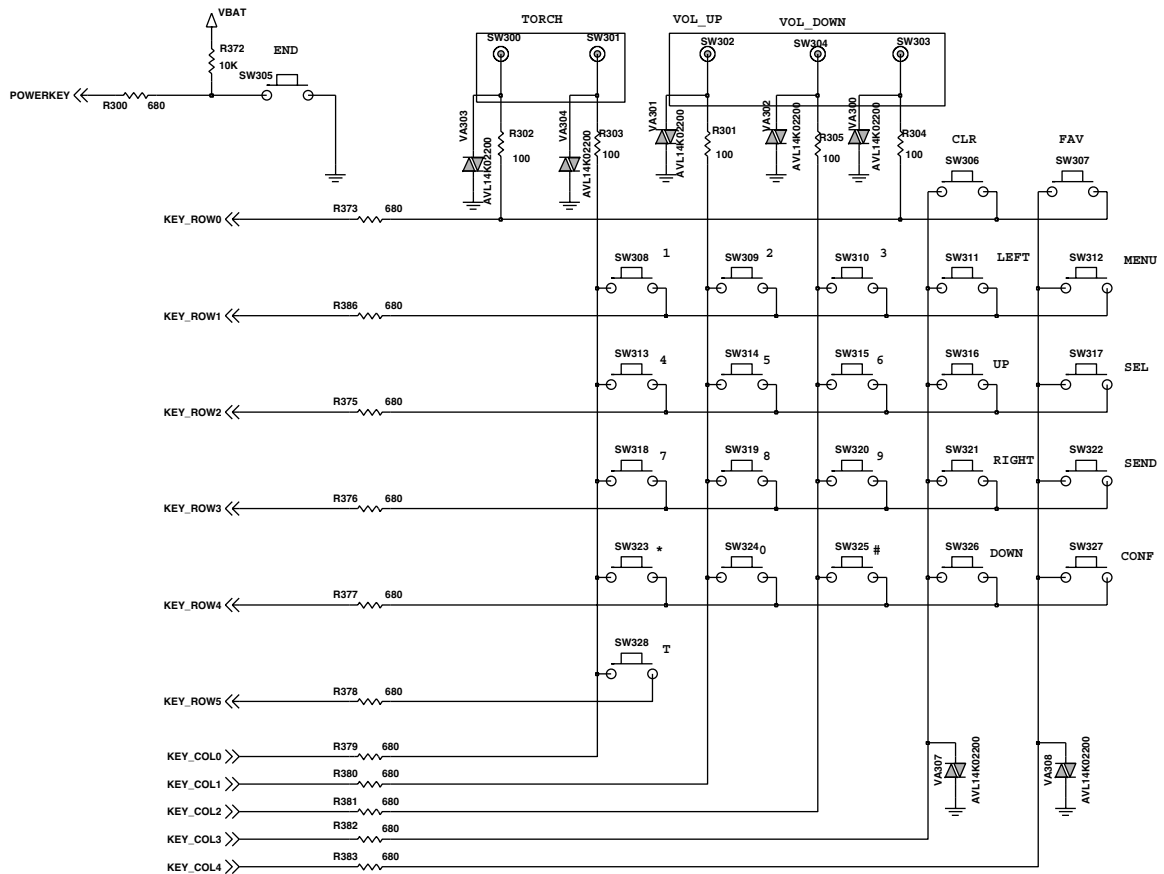
Figure 3-23. LCD INTERFACE CIRCUIT



3.8 Keypad Switches and Scanning

The key switches are metal domes, which make contact between two concentric pads on the keypad layer of the PCB when pressed. There are 27 switches (Normal Key 24EA, Torch side key, Volume up down side key), connected in a matrix of 5 rows by 5 columns and additional GPIO 35 for KEY_ROW5, as shown in Figure 3-24, except for the power switch (KB1), which is connected independently. Functions, the row and column lines of the keypad are connected to ports of AD6527. The columns are outputs, while the rows are inputs and have pull-up resistors built in. When a key is pressed, the corresponding row and column are connected together, causing the row input to go low and generate an interrupt. The columns/rows are then scanned by AD6527 to identify the pressed key.

Figure 3-27. Keypad Switches and Scanning

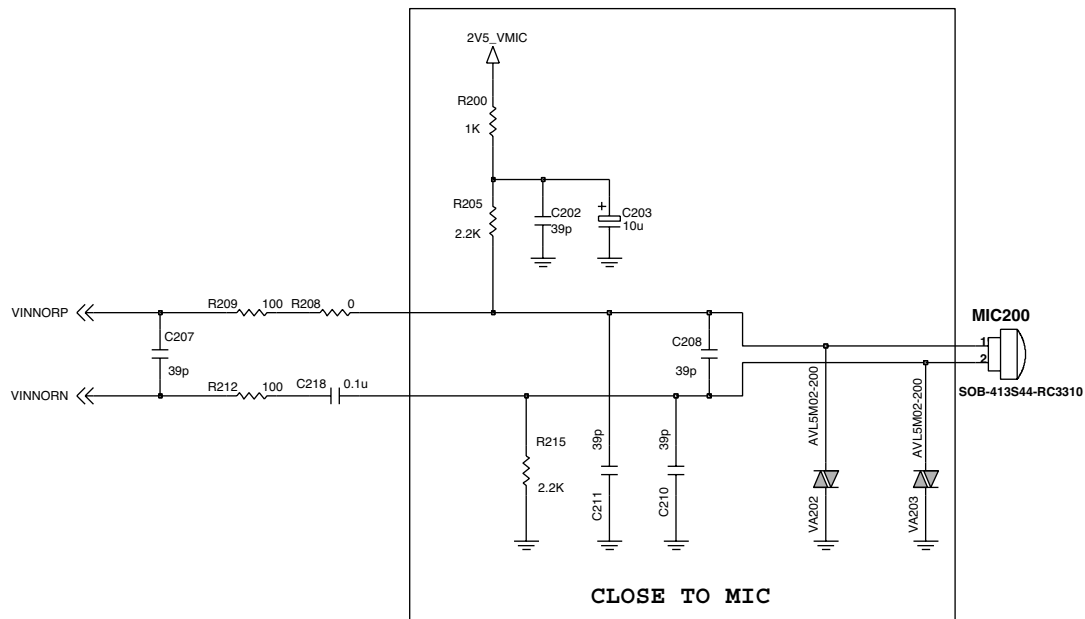


3. TECHNICAL BRIEF

3.9 Microphone

The microphone is placed to the front cover and contacted to main PCB. The audio signal is passed to AIN1P and AIN1N pins of AD6537B. The voltage supply VMIC is output from AD6537B, and is a biased voltage for the AIN1P. The AIN1P and AIN1N signals are then A/D converted by the voiceband ADC part of AD6537B. The digitized speech (PCM 8KHz ,16KHz) is then passed to the DSP section of AD6527 for processing (coding, interleaving etc).

Figure 3-28. Connection between Microphone and AD6537B



3.10 Main Speaker

In the case of C2100 , there are 3 different speakers. One is main speaker for the received voice, the other is loud speaker for playback of ring tone , key tone and other MIDI sounds and another is headset speaker.

The main speaker is driven directly from AD6537B AOUT1P and AOUT1N pins and the gain is controlled by the PGA in an AD6537B. The receiver is placed in the folder cover and connected to AOUT1x terminal via FPCB.

3.11 Headset Interface

This phone chooses a 5 pin type headset which has 6 electrodes such as GND, AUXIP, AUXIN (this pin is floating), AUXOP, JACK_DETECT, HOOK_DETECT. This type supports mono sound.

Switching from Receiver to Headset Jack

If jack is inserted, JACK_DETECT goes from low to high.

Audio path is switched from receiver to earphone by JACK_DETECT interrupt.

Switching from Headset Jack to Receiver

If jack is removed, JACK_DETECT goes from high to low.

Audio path is switched from earphone to receiver by JACK_DETECT interrupt.

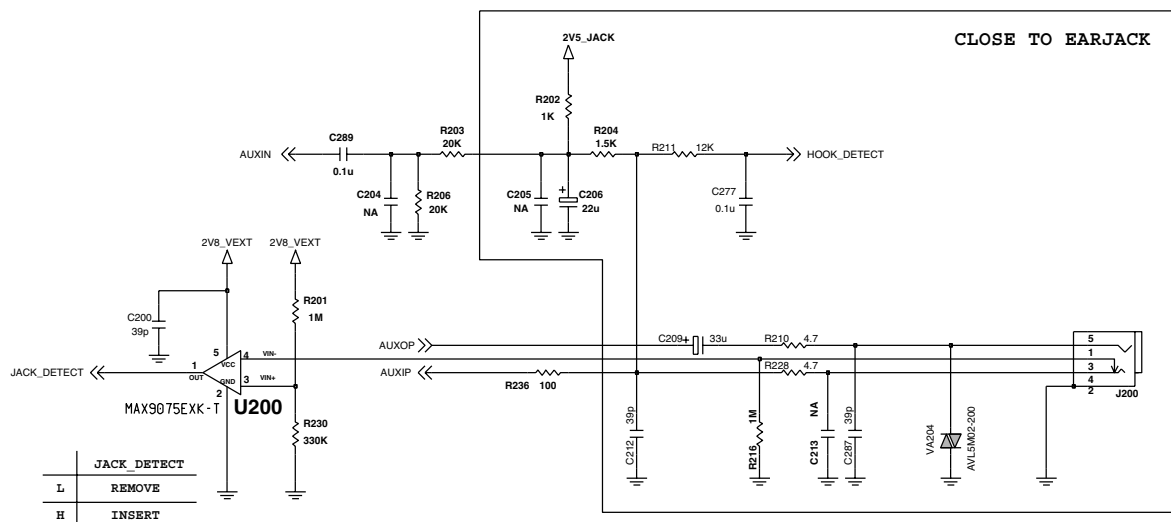
Hook detection

If hook-button is pressed, HOOK_DETECT is changed from high to low.

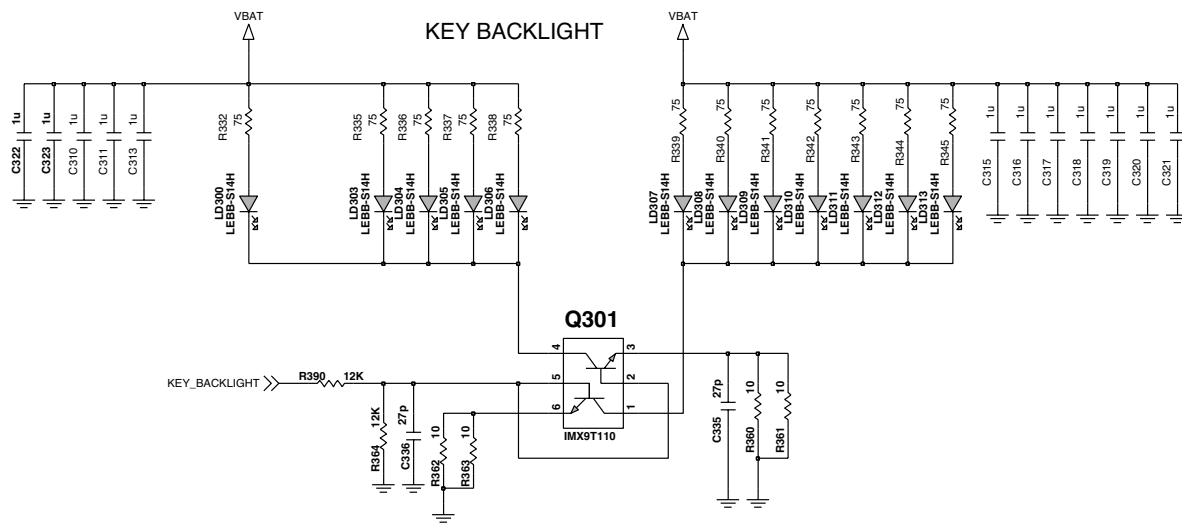
This is detected by AUXADC2.

And then hook is detected.

Figure 3-29. HEADSET JACK INTERFACE



In key back-light illumination, there are 12 Blue LEDs in Main Board, which are driven by KEY_BACKLIGHT signal from AD6527.

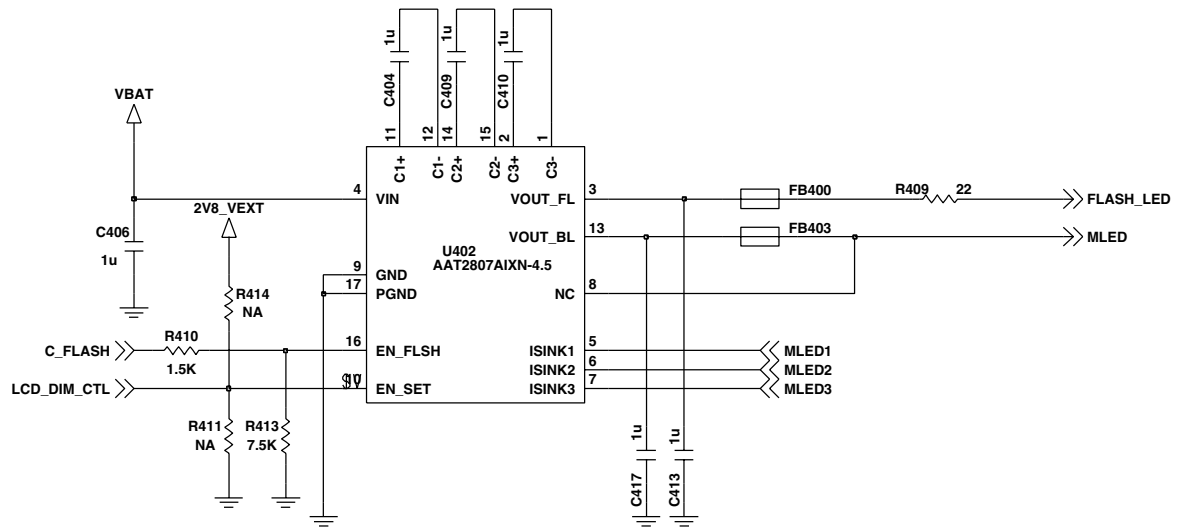


3.13 LCD Back-light Illumination

LCD backlight LEDs is controlled by DBB via AAT2807, U402.

Figure 3-31. MAIN LCD BACKLIGHT ILLUMINATION

WHITE/FLASH LED LDO

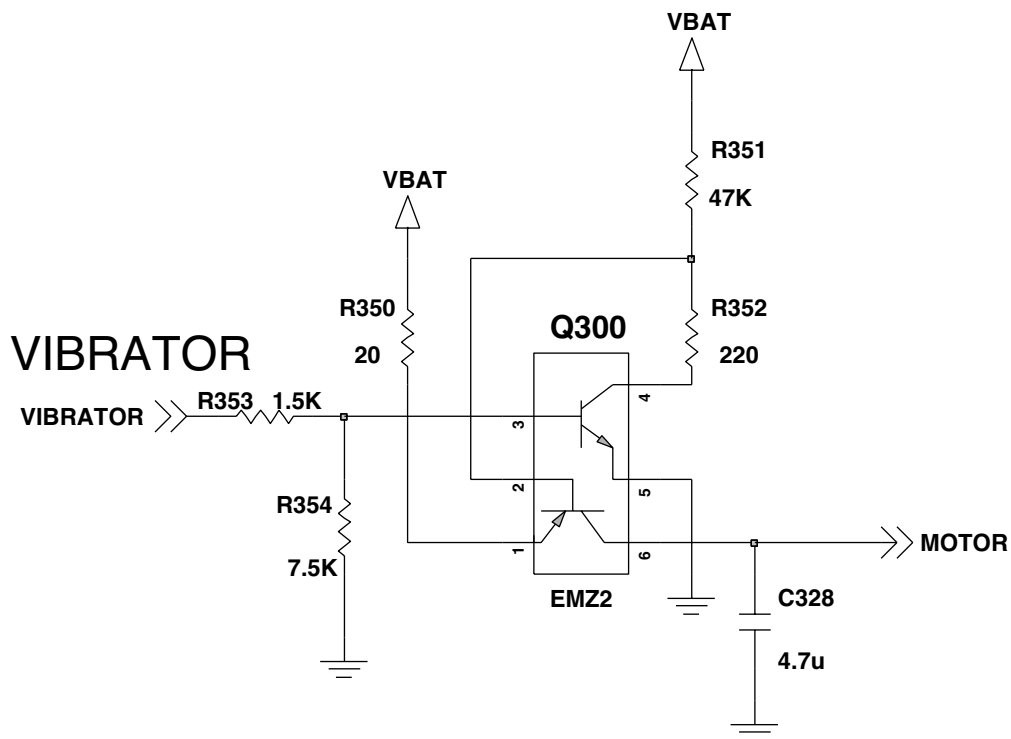


3. TECHNICAL BRIEF

3.14 VIBRATOR

The vibrator is placed in the folder cover and contacted to LCD MODULE. The vibrator is driven from VIBRATOR (GPIO_3) of AD6527.

Figure 3-32. MOTOR



4. TROUBLE SHOOTING

4.1 RX Trouble

Test Points

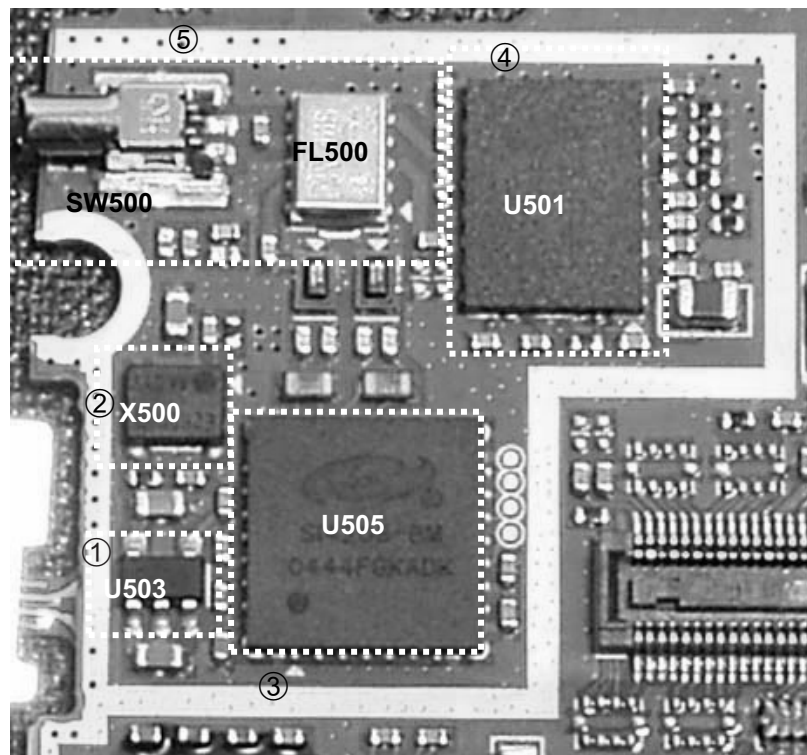
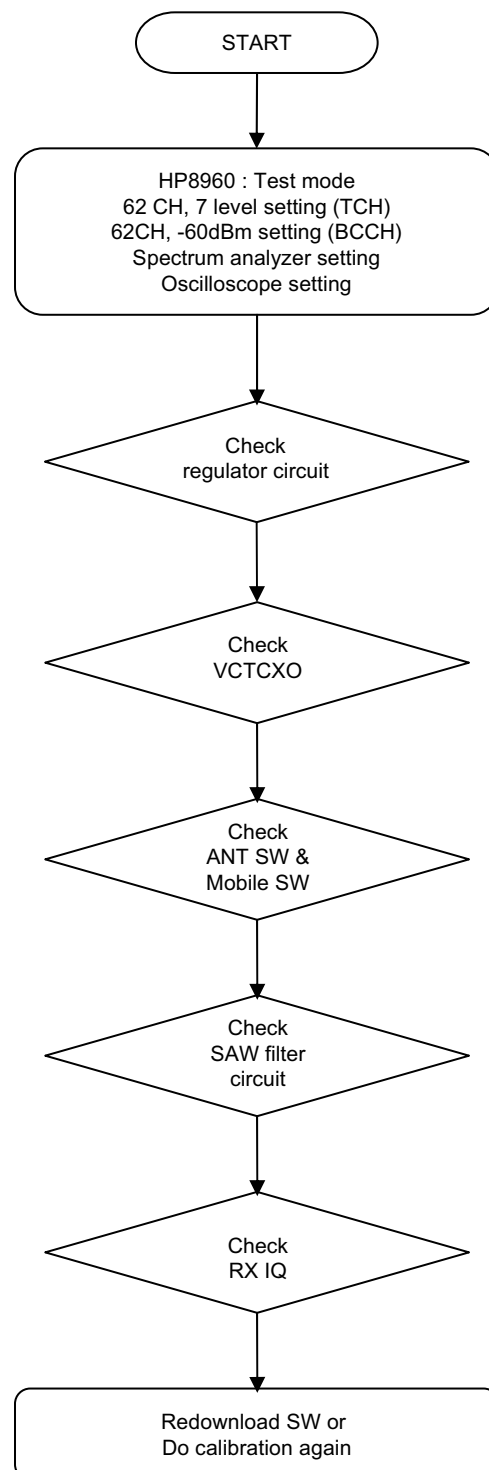


Figure 4-1(a)

4. TROUBLE SHOOTING

Checking Flow



(1) Checking Regulator Circuit

Test Points

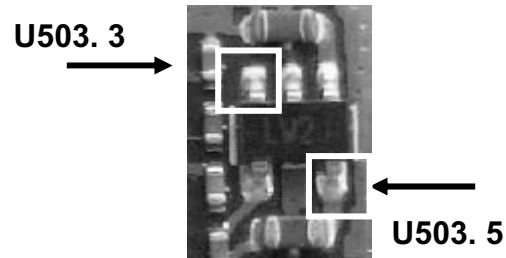
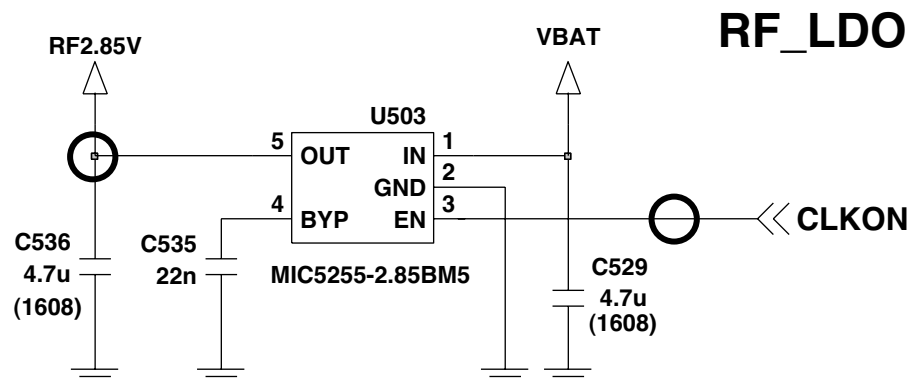
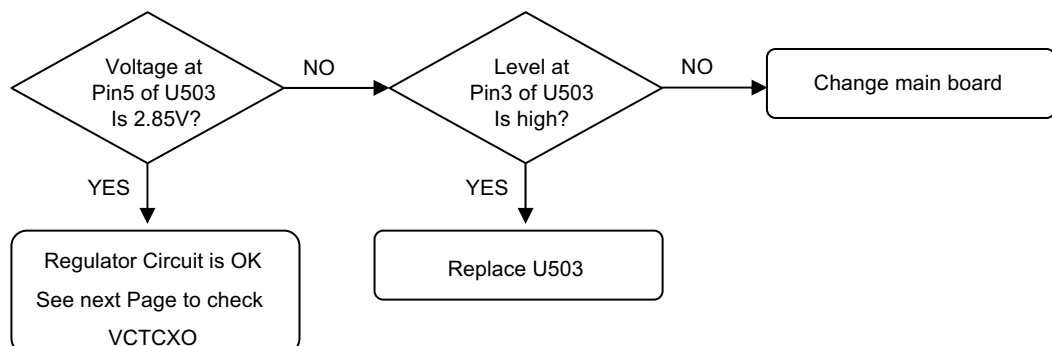


Figure 4-2

Circuit Diagram



Checking Flow

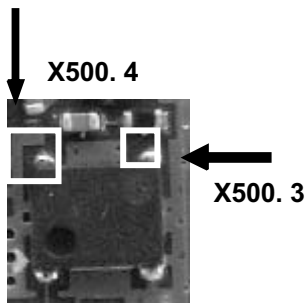


4. TROUBLE SHOOTING

(2) Checking VCTCXO Circuit

Test Points

Figure 4-3



Checking Flow

Check Pin 3.
Refer to Graph 4-1(b)

26 MHz O.K?

Yes

VCTCXO Circuit is OK
See next Page to check
ANT SW & Mobile SW

No

Check Pin 4.
Refer to Graph 4-1(a)

2.75V OK?

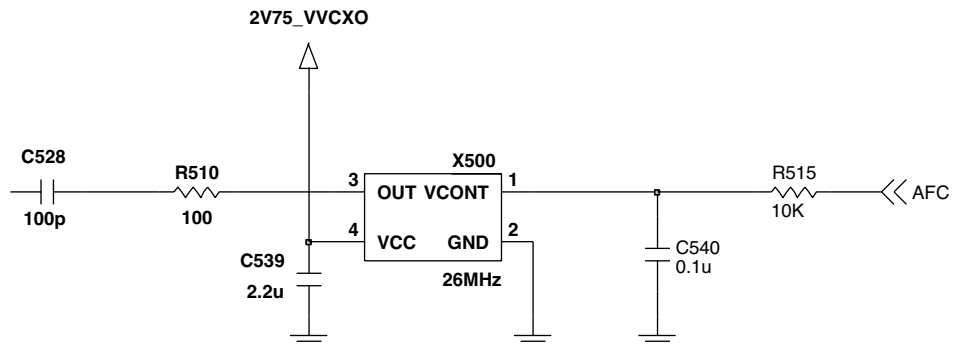
Yes

Changing X500

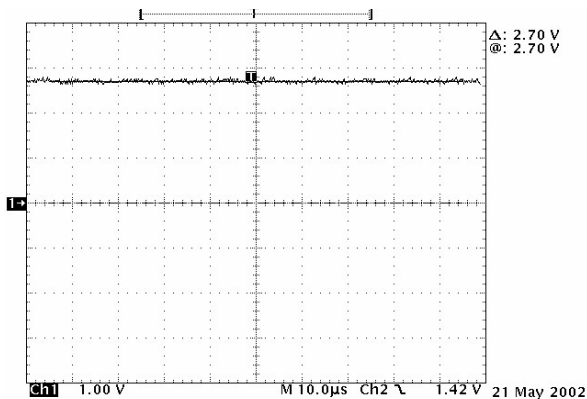
No

Check U101, PMIC

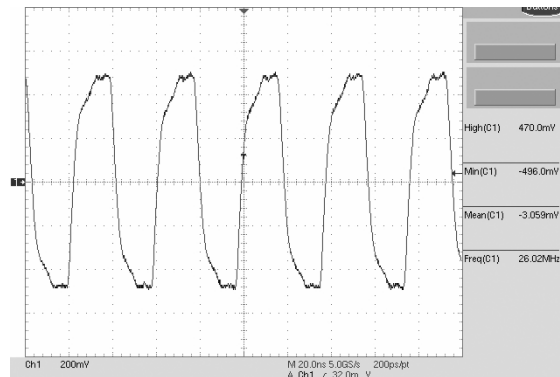
Circuit Diagram



Waveform



Graph 4-1(a)



Graph 4-1(b)

4. TROUBLE SHOOTING

(3) Checking Ant SW & Mobile SW

Test Points

Circuit Diagram

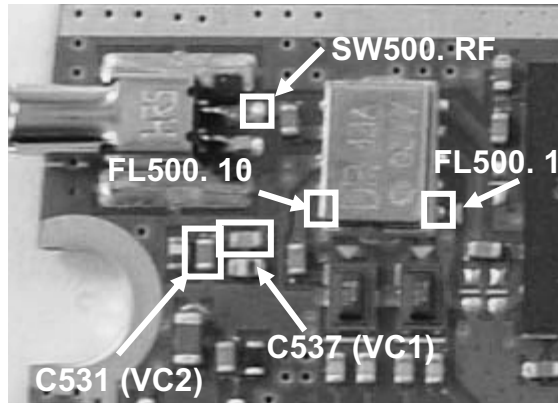
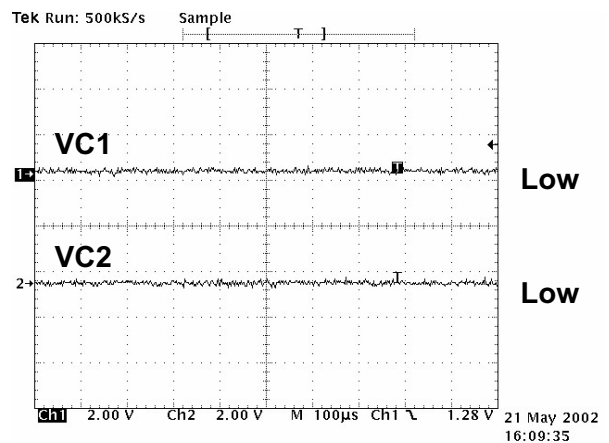
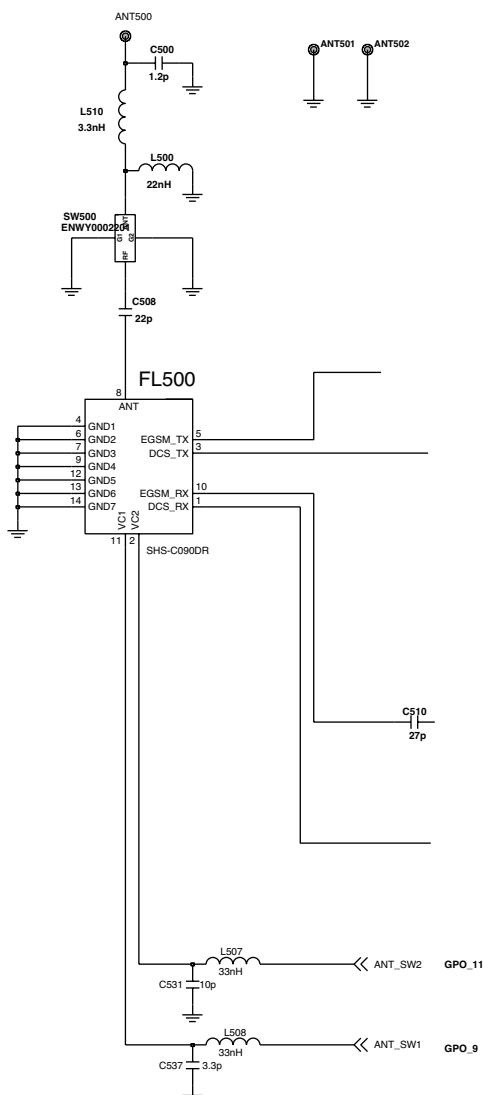


Figure 4-4

Waveform



ANT SW Control GSM& DCS RX Mode
Graph 4-2



| | ANT_SW1 | ANT_SW2 |
|--------|---------|---------|
| GSM_TX | HIGH | LOW |
| DCS_TX | LOW | HIGH |
| RX | LOW | LOW |

Table 4-1

4. TROUBLE SHOOTING

Checking Flow

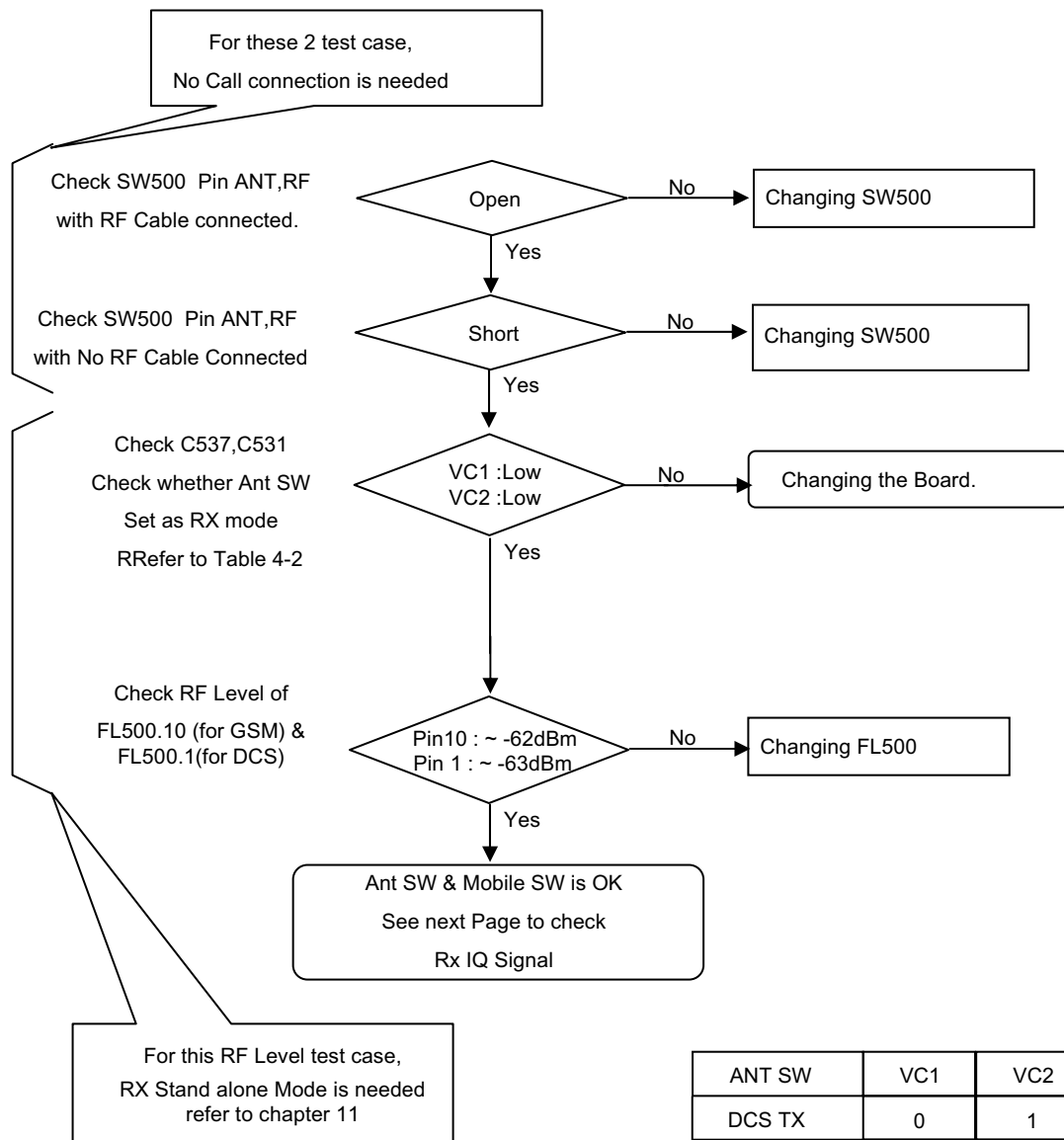


Table 4-2

(4) Checking SAW Filter Circuit

Test Points

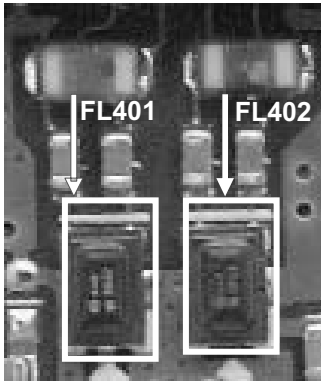
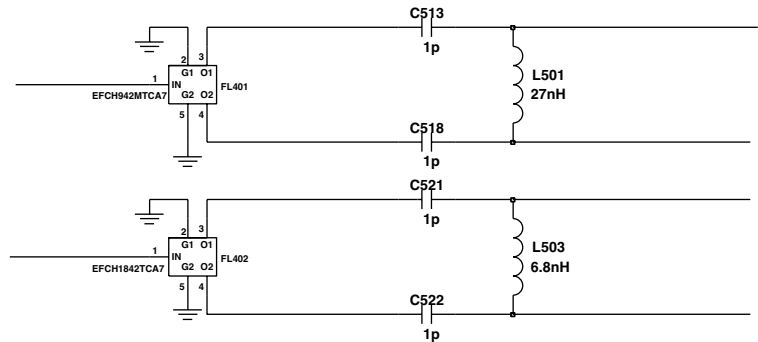
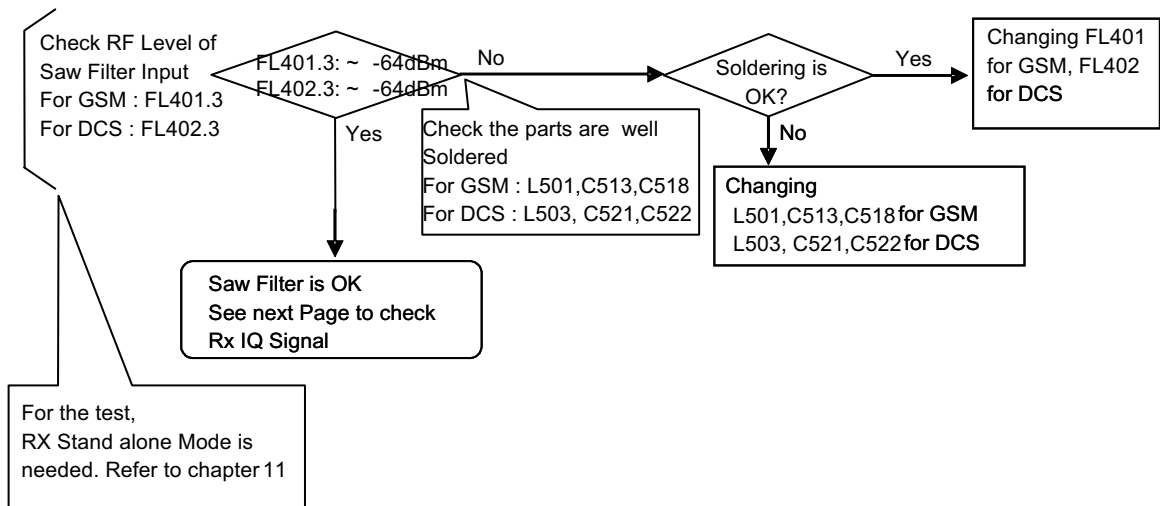


Figure 4-5

Circuit Diagram



Checking Flow



4. TROUBLE SHOOTING

(5) Checking RX IQ

Test Points

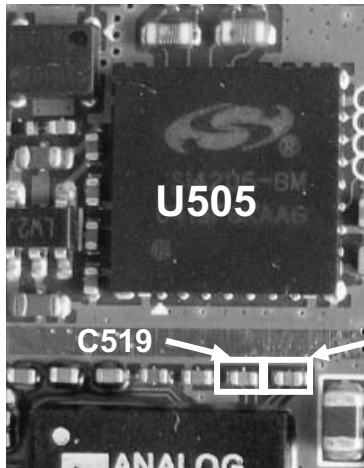
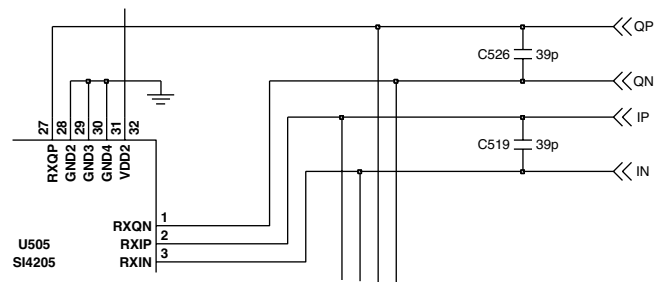
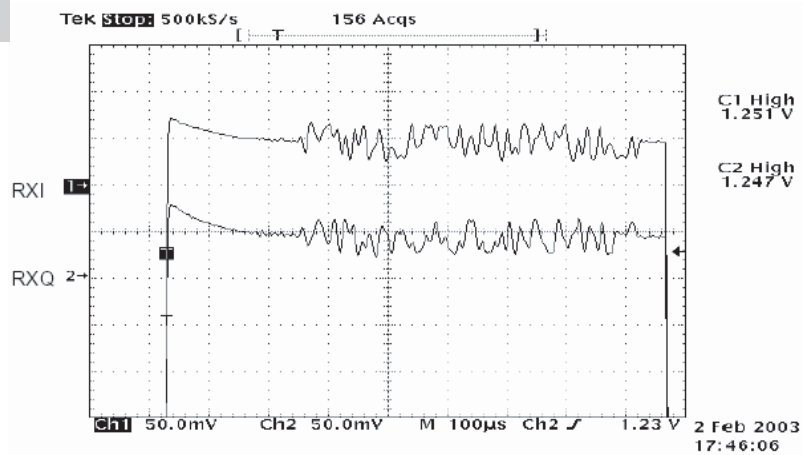


Figure 4-6

Circuit Diagram



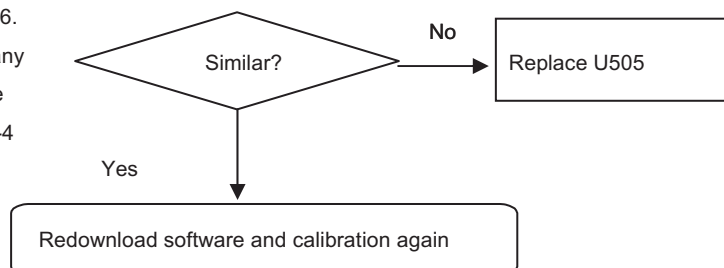
Waveform



Graph 4-3

Checking Flow

Check C519,C526.
Check if there is any
Major difference
Refer to graph 4-4



4.2 TX Trouble

Test Points

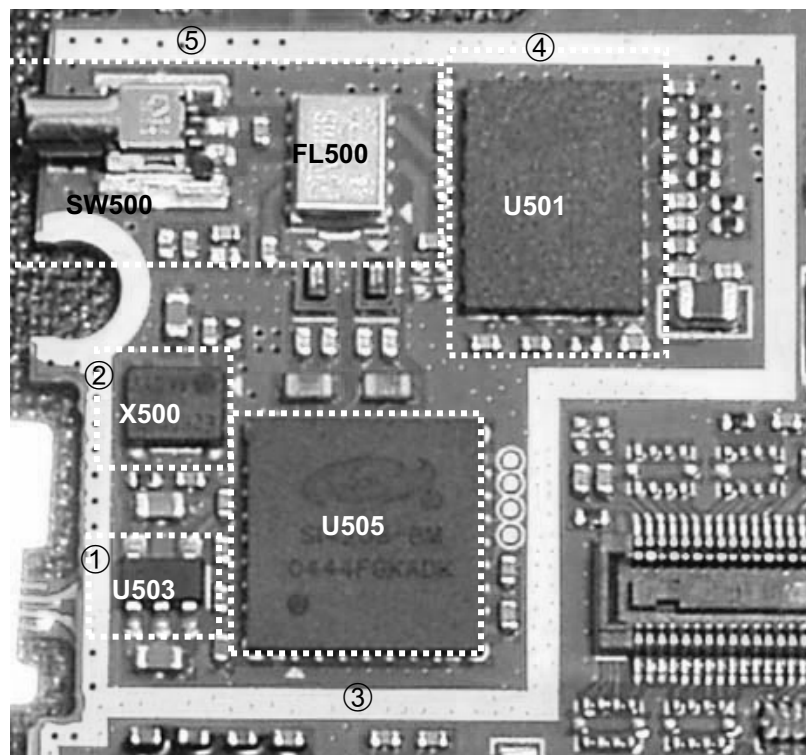
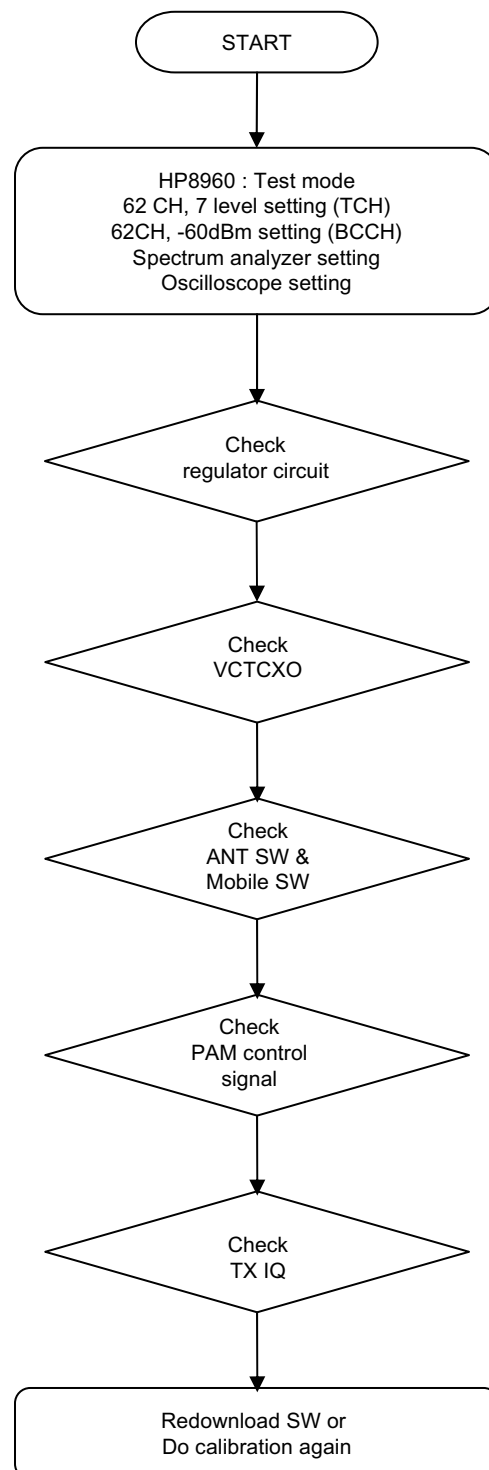


Figure 4-7

4. TROUBLE SHOOTING

Checking Flow



(1) Checking Regulator Circuit

Test Points

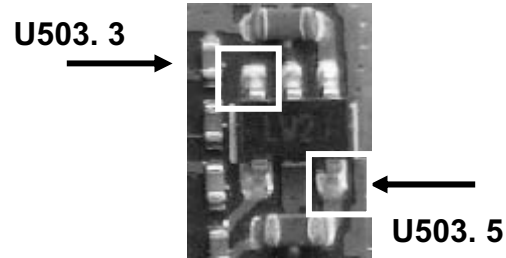
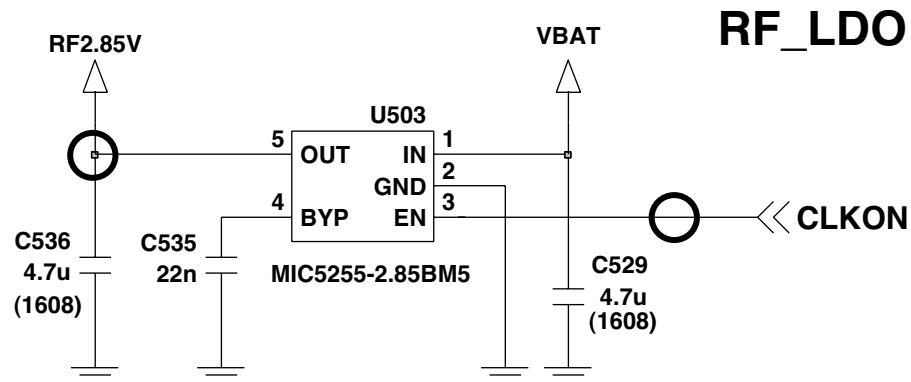
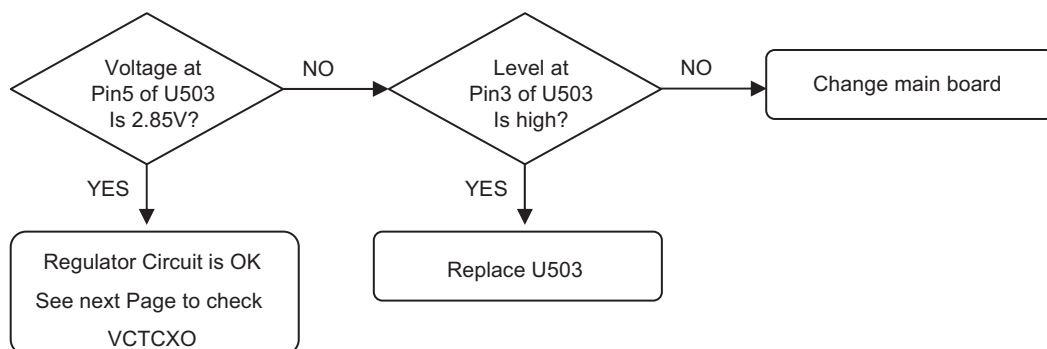


Figure 4-8

Circuit Diagram



Checking Flow



4. TROUBLE SHOOTING

(2) Checking VCTCXO Circuit

Test Points

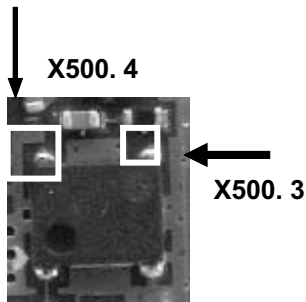
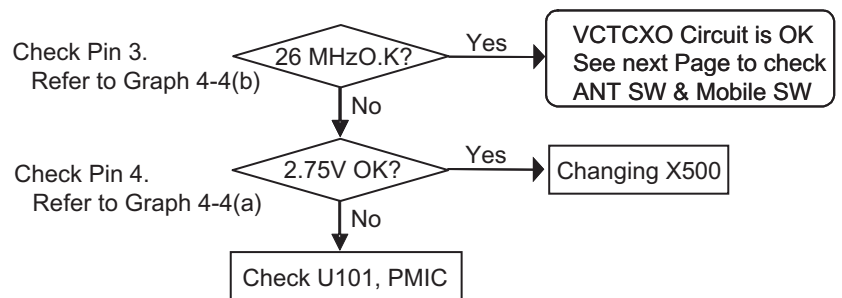
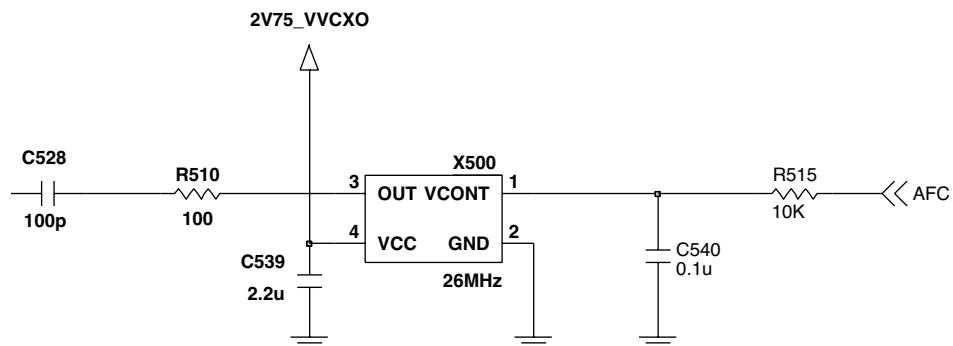


Figure 4-9

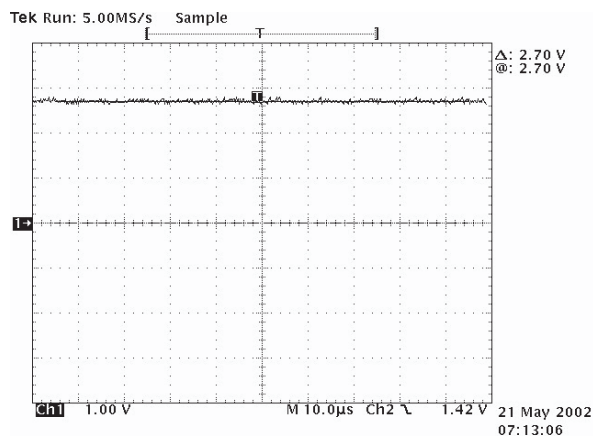
Checking Flow



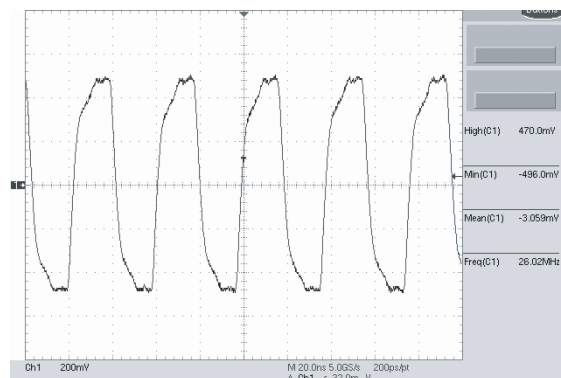
Circuit Diagram



Waveform



Graph 4-4(a)



Graph 4-4(b)

4. TROUBLE SHOOTING

(3) Checking Ant SW & Mobile SW

Test Points

Circuit Diagram

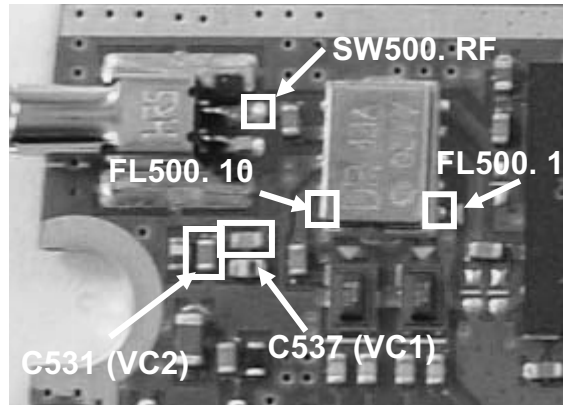
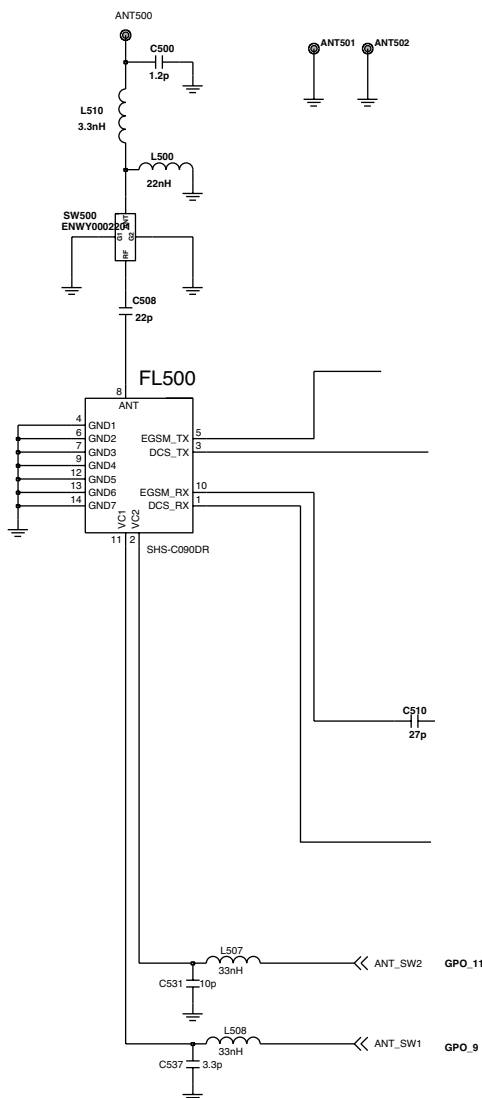
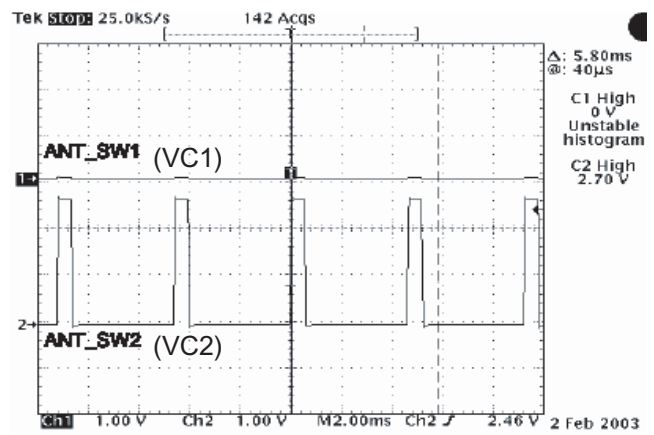


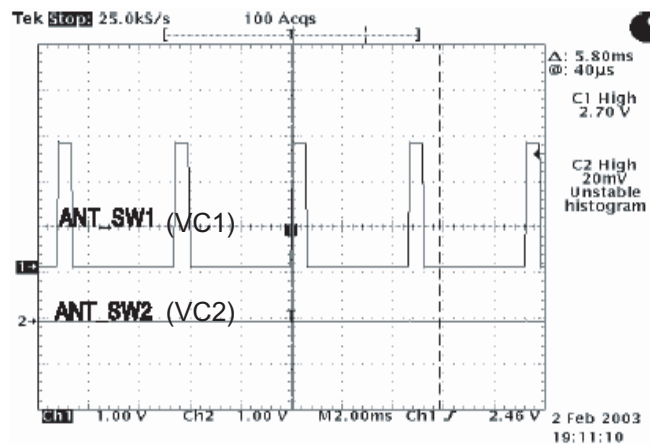
Figure 4-10



Waveform



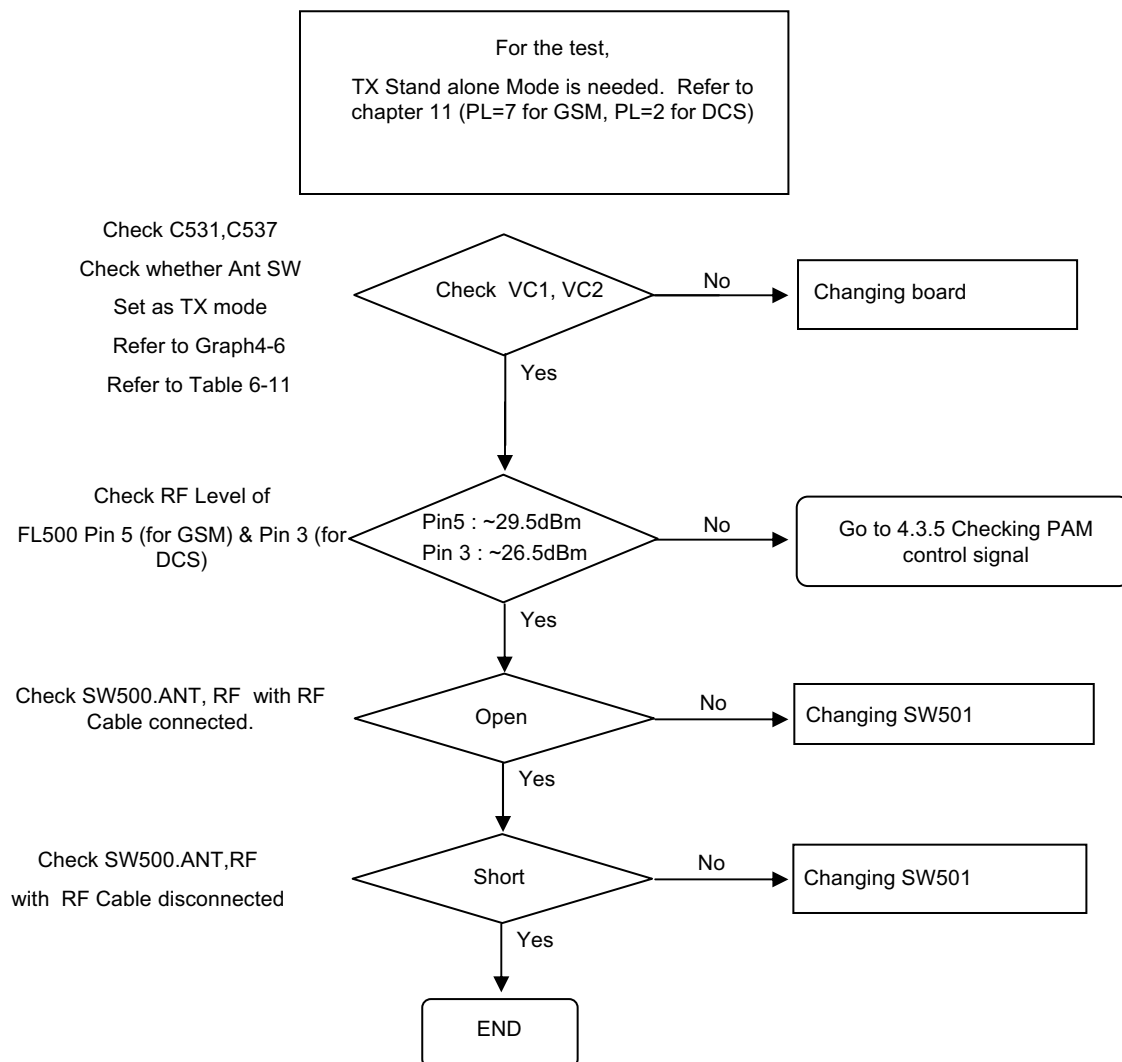
Graph 4-5(a)



Graph 4-5(b)

4. TROUBLE SHOOTING

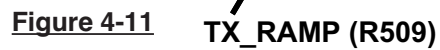
Checking Flow



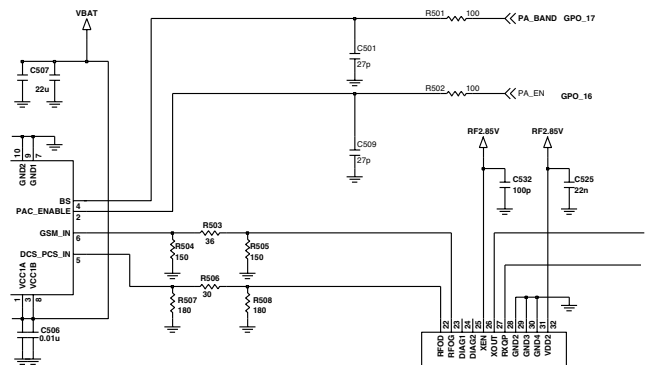
| ANT SW | VC1 | VC2 |
|--------------|-----|-----|
| DCS TX | 0 | 1 |
| EGSM TX | 1 | 0 |
| EGSM, DCS RX | 0 | 0 |

Table 4-3

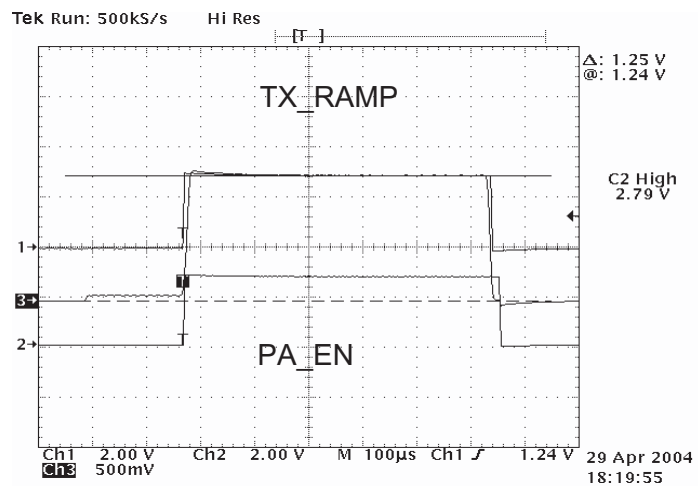
Test Points



Circuit Diagram



Waveform



Graph 4-6

Checking Flow

```
graph TD
    A{Similar?} -- No --> B[Redownload S/W]
    A -- Yes --> C[Go to Next Step]
```

4. TROUBLE SHOOTING

(5) Checking TX IQ

Test Points

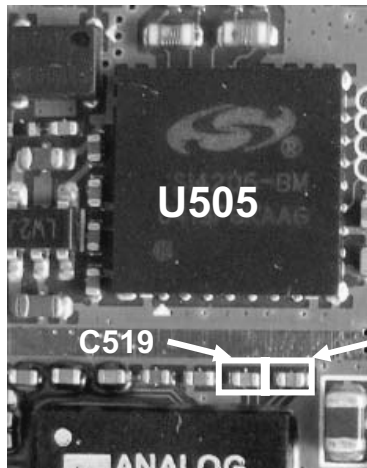
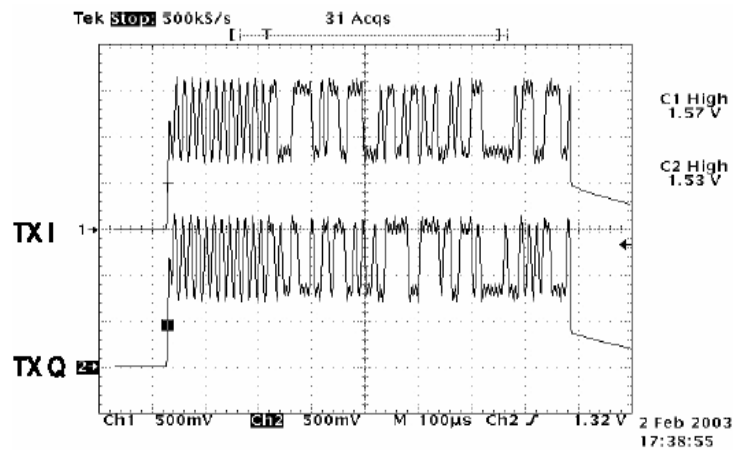


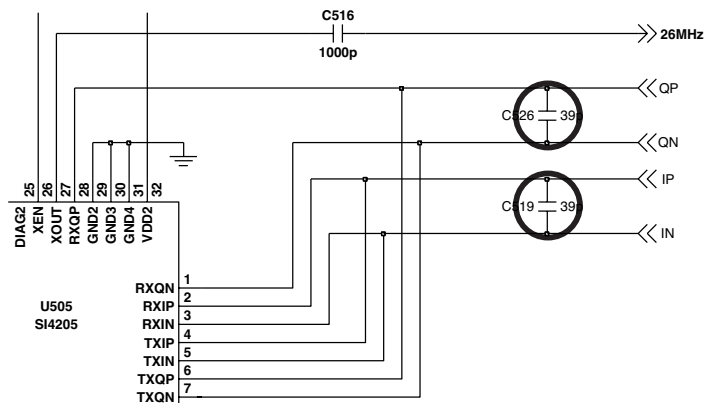
Figure 4-12

Waveform

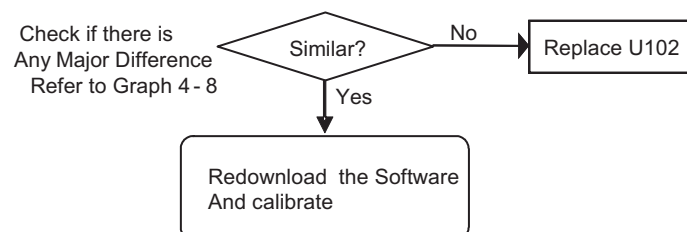


Graph 4-7

Circuit Diagram



Checking Flow



4.3 Power On Trouble

Test Points

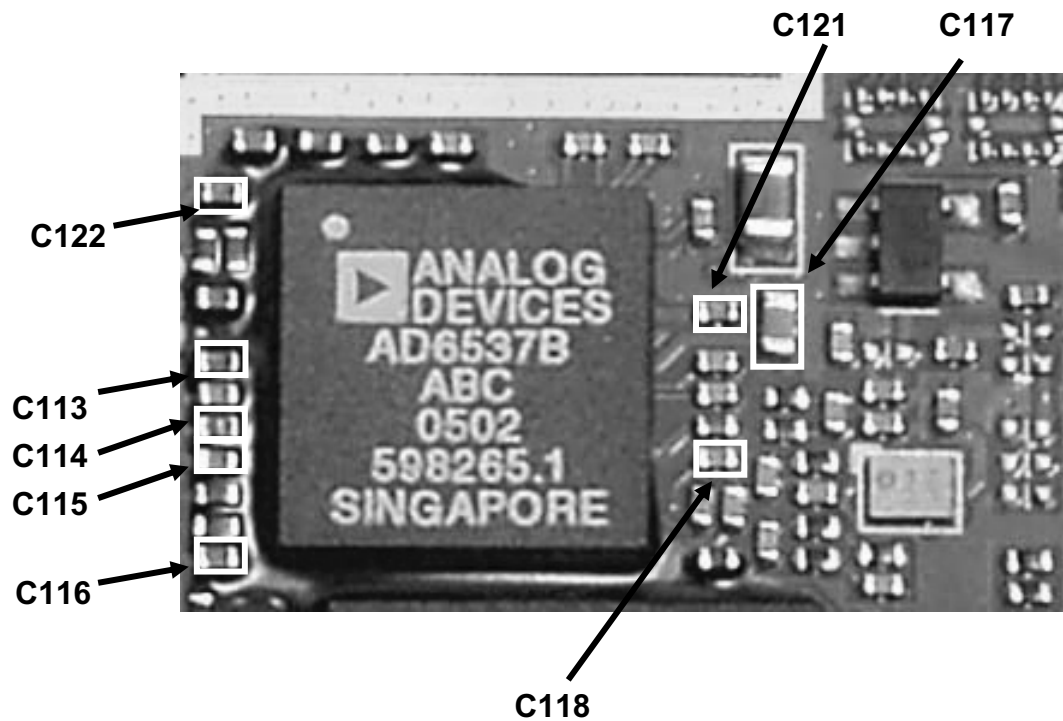
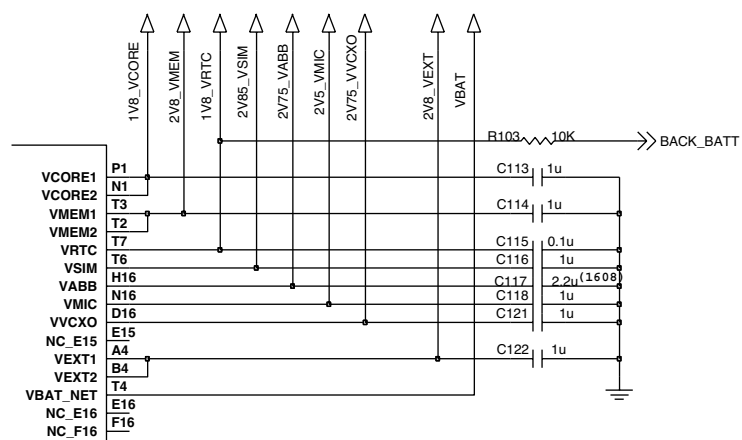


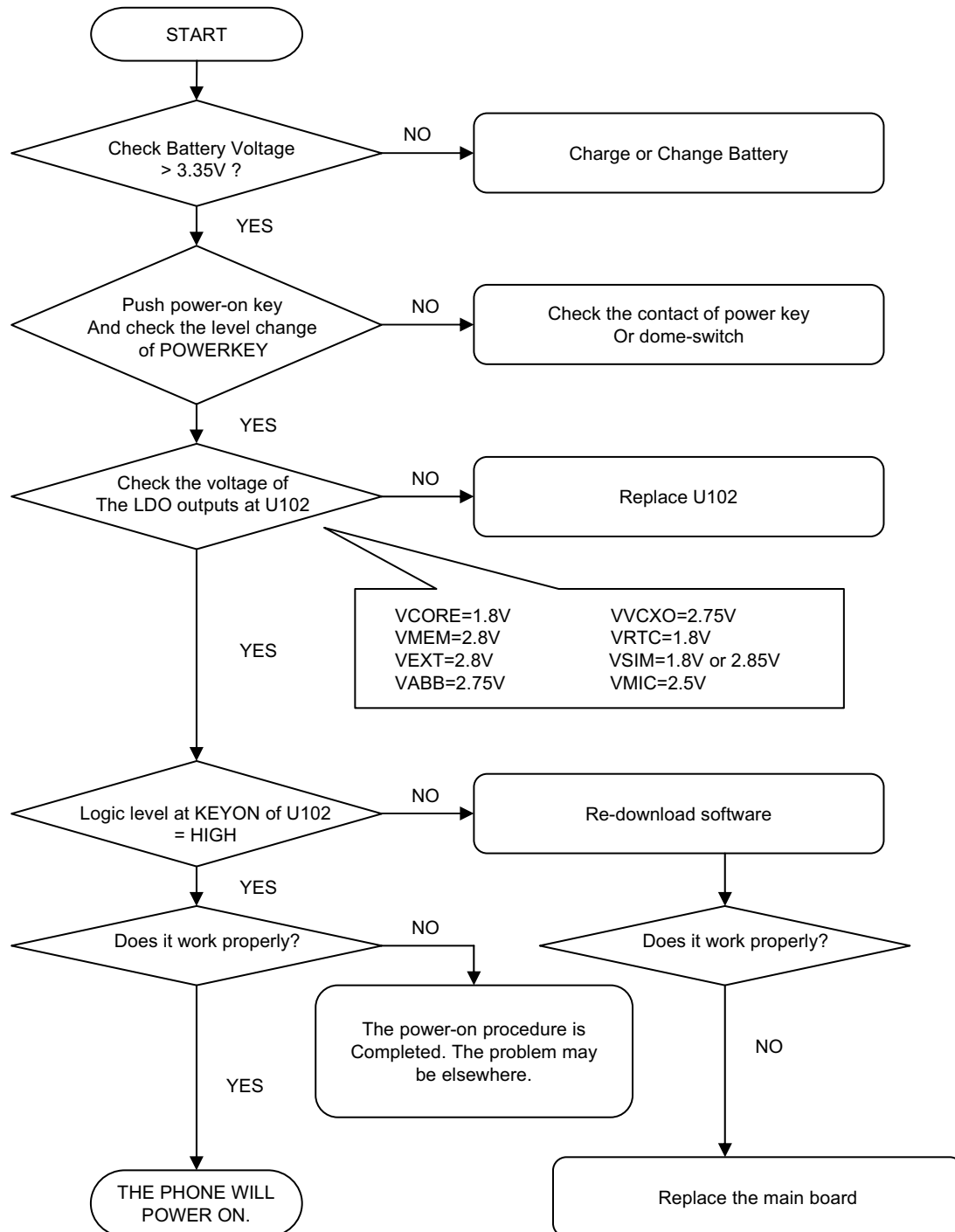
Figure 4-13

Circuit Diagram



4. TROUBLE SHOOTING

Checking Flow



4.4 Charging Trouble

Test Points

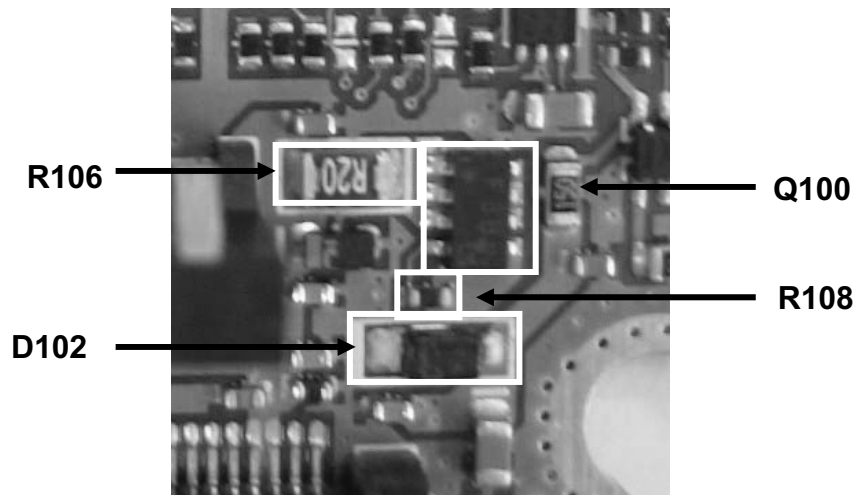
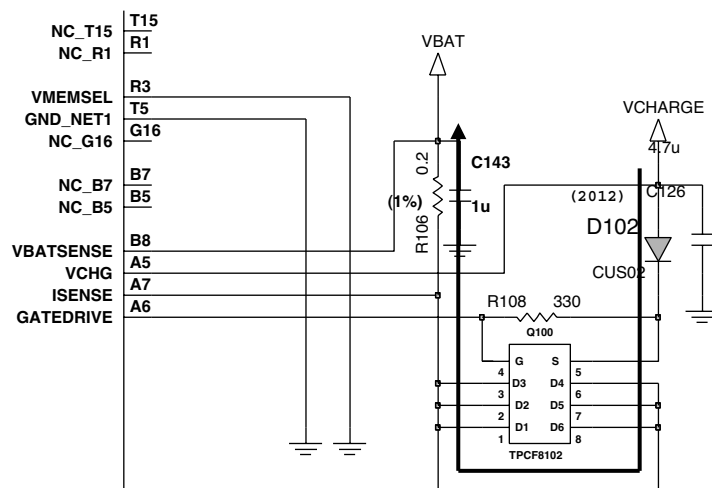


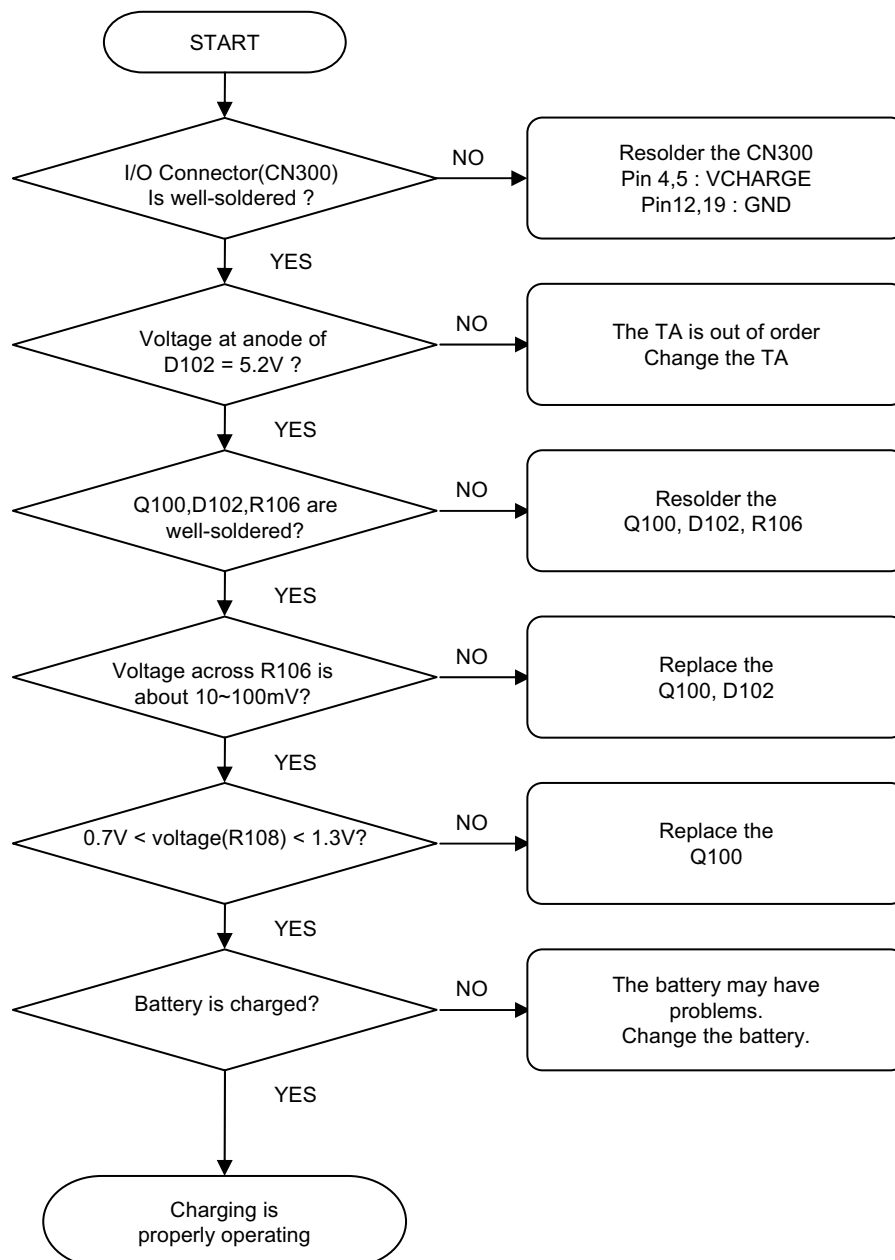
Figure 4-14

Circuit Diagram



4. TROUBLE SHOOTING

Checking Flow



4.5 Vibrator Trouble

Test Points

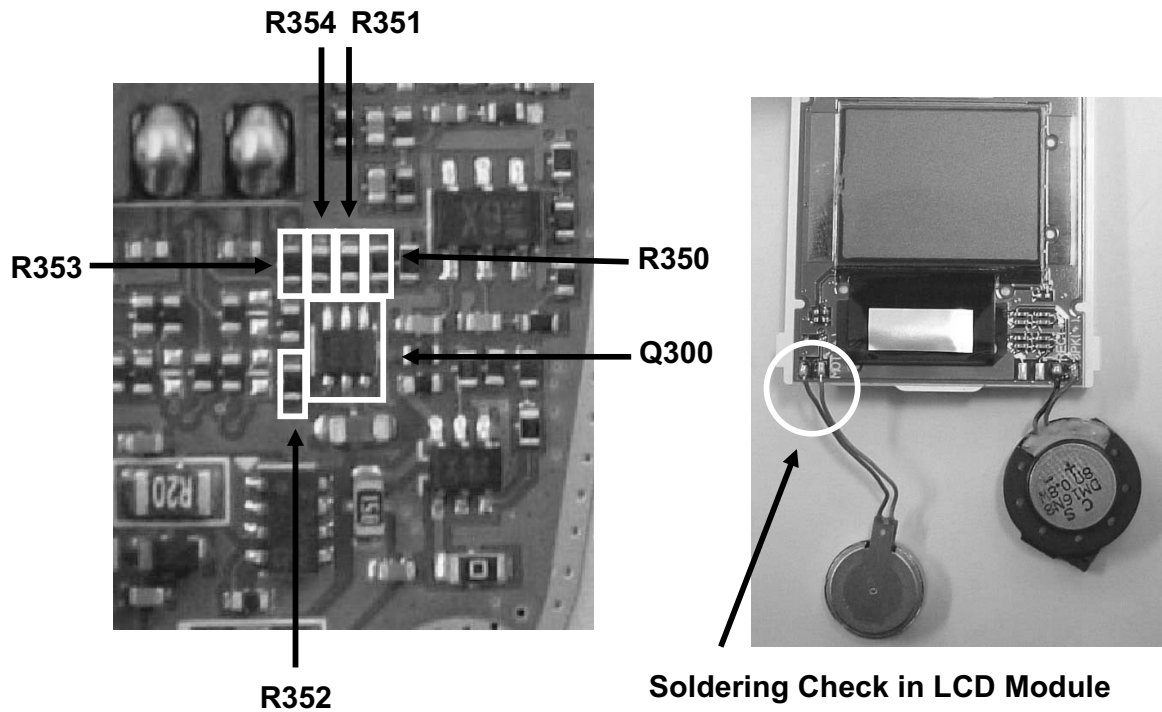
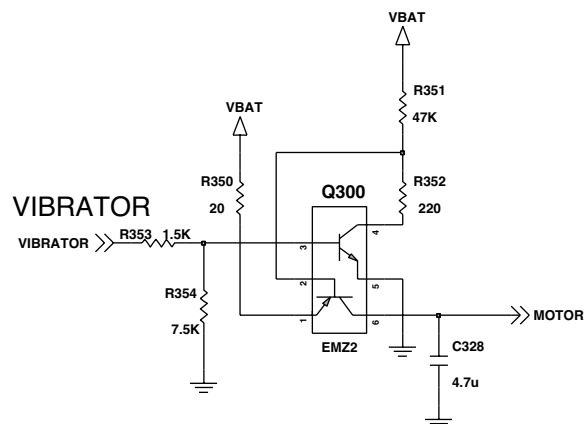


Figure 4-15

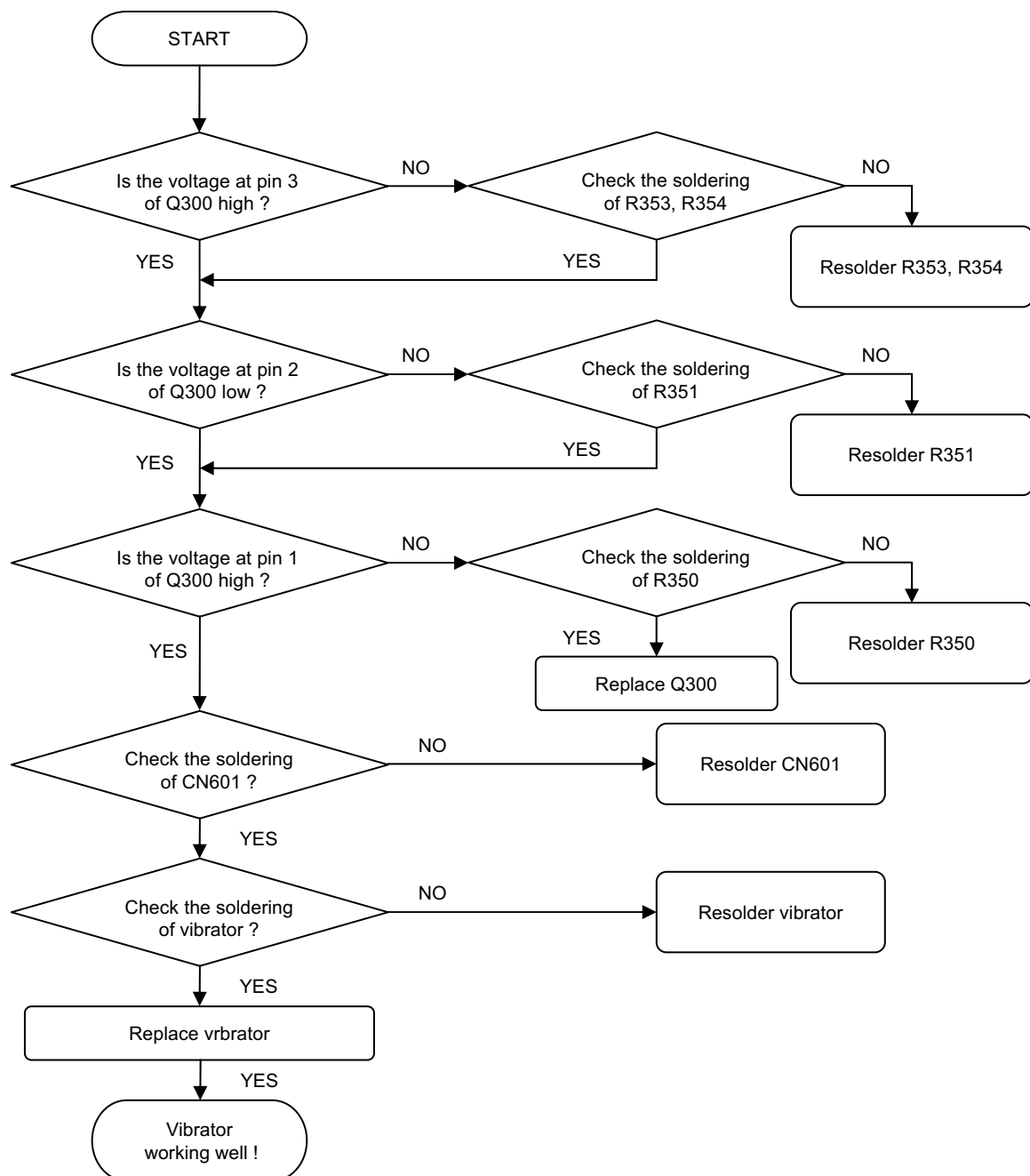
Circuit Diagram



4. TROUBLE SHOOTING

Checking Flow

SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu



4.6 LCD Trouble

Test Points

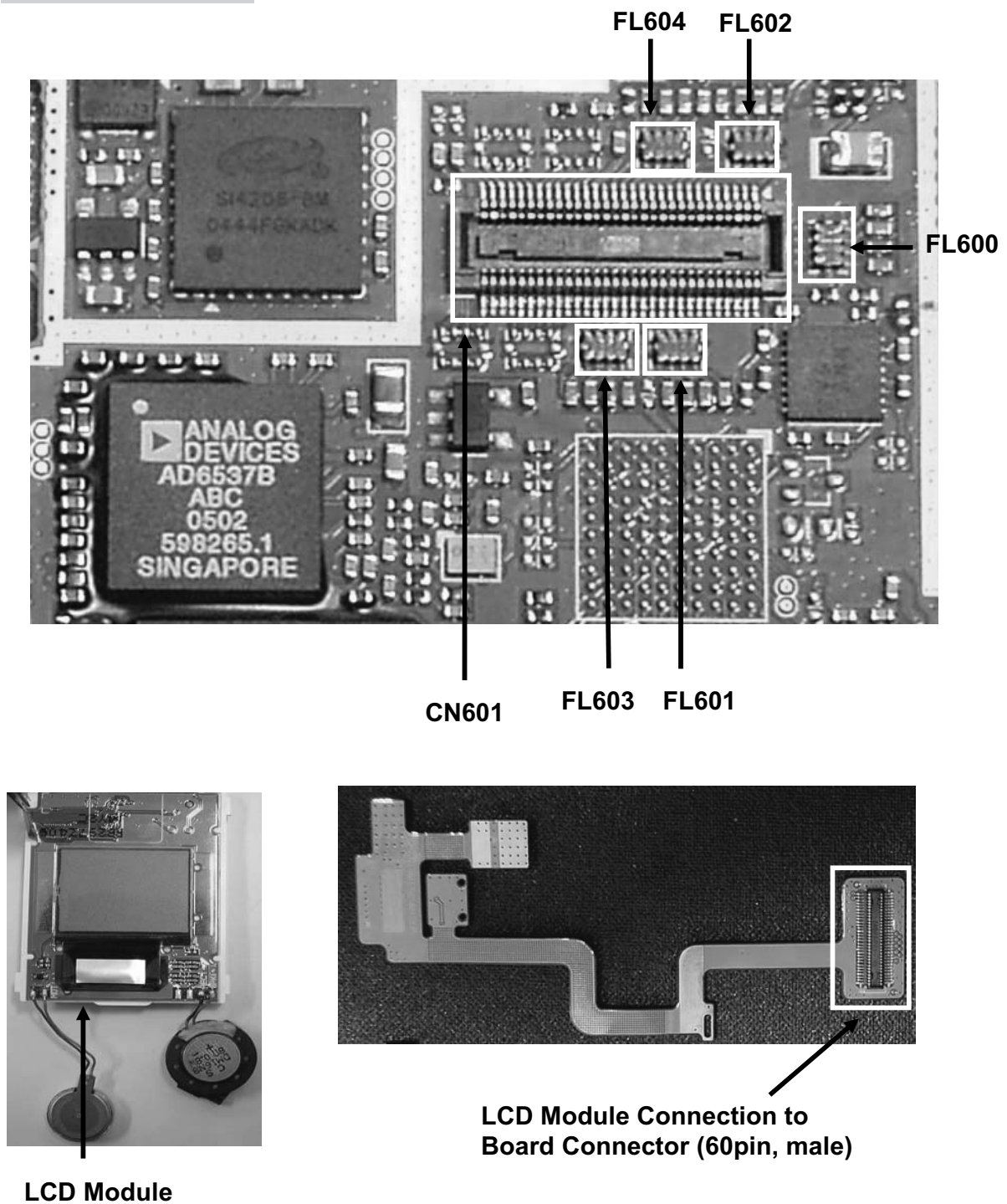
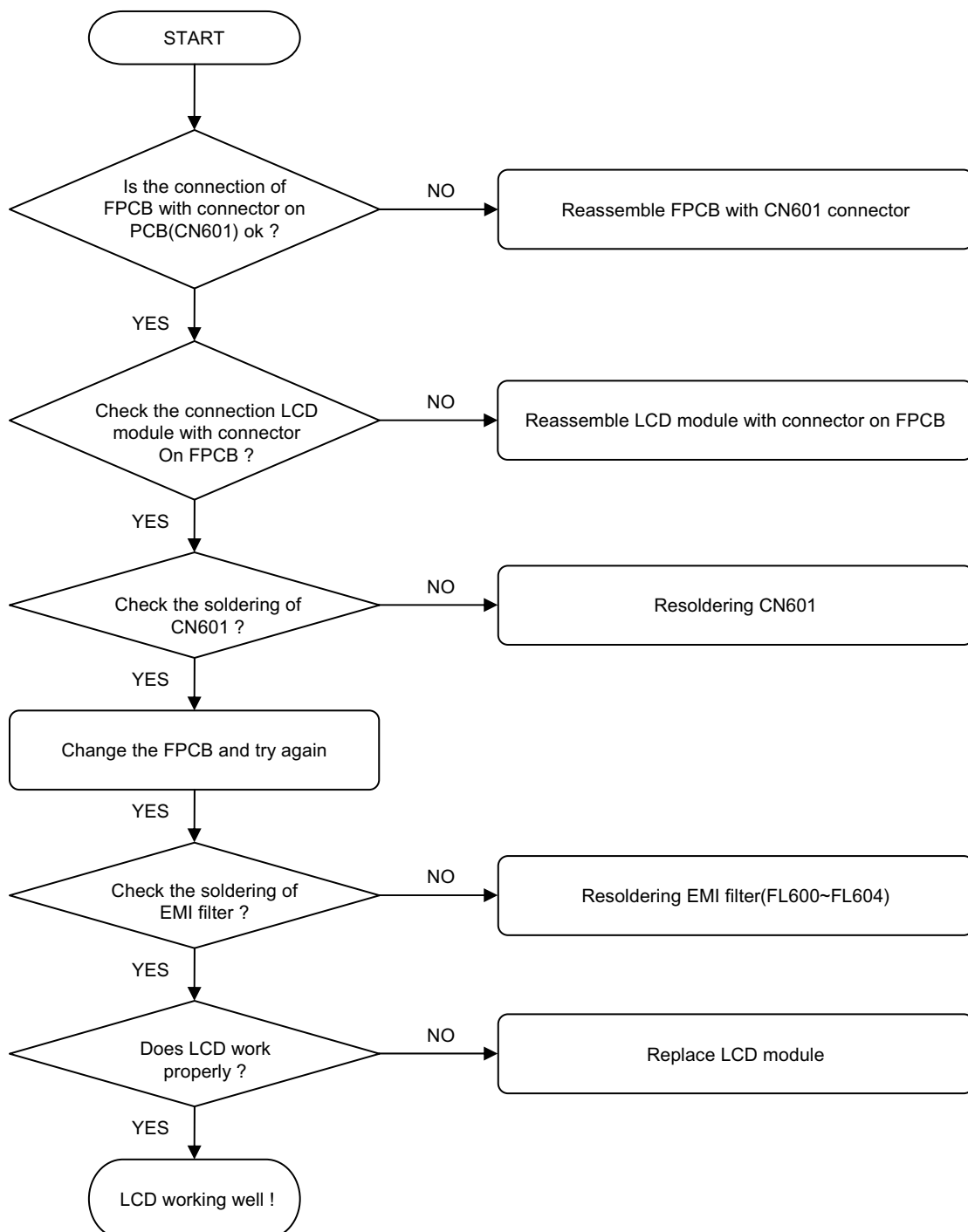


Figure 4-16

4. TROUBLE SHOOTING

Checking Flow



4.7 MIC Trouble

Test Points

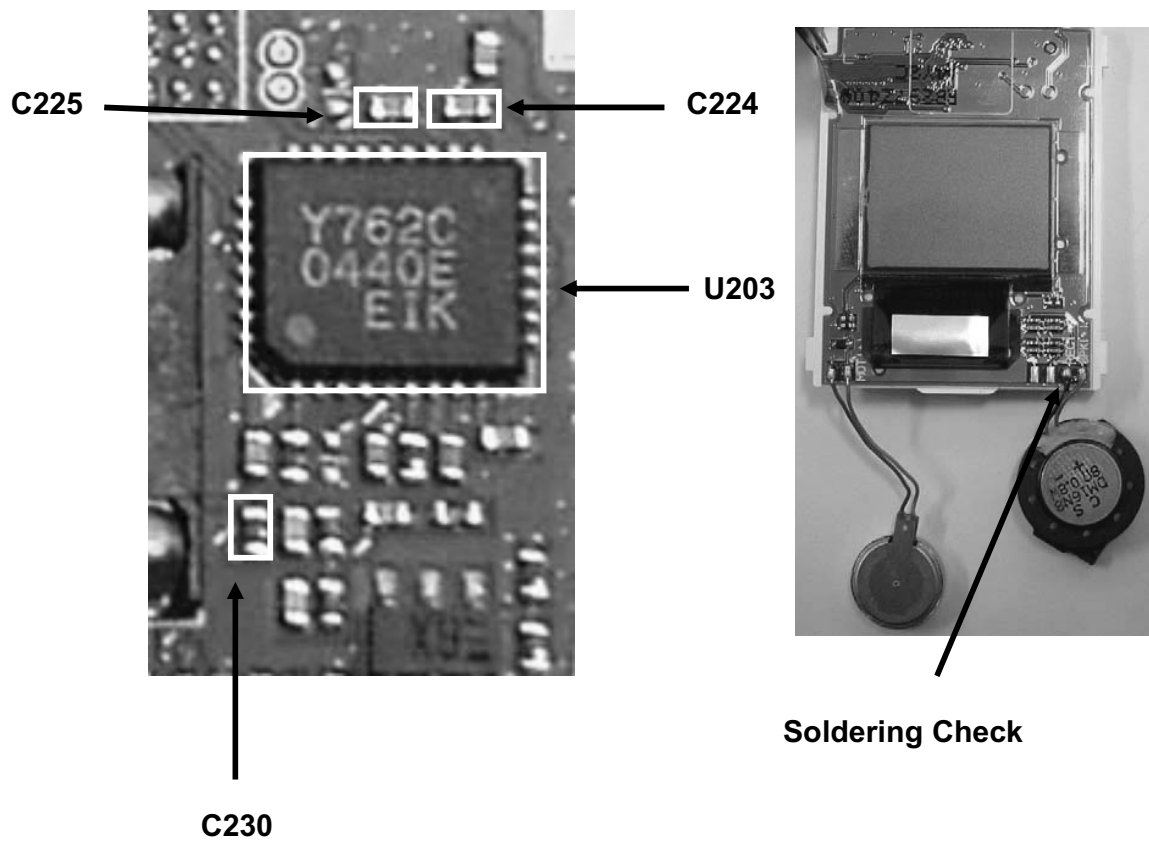
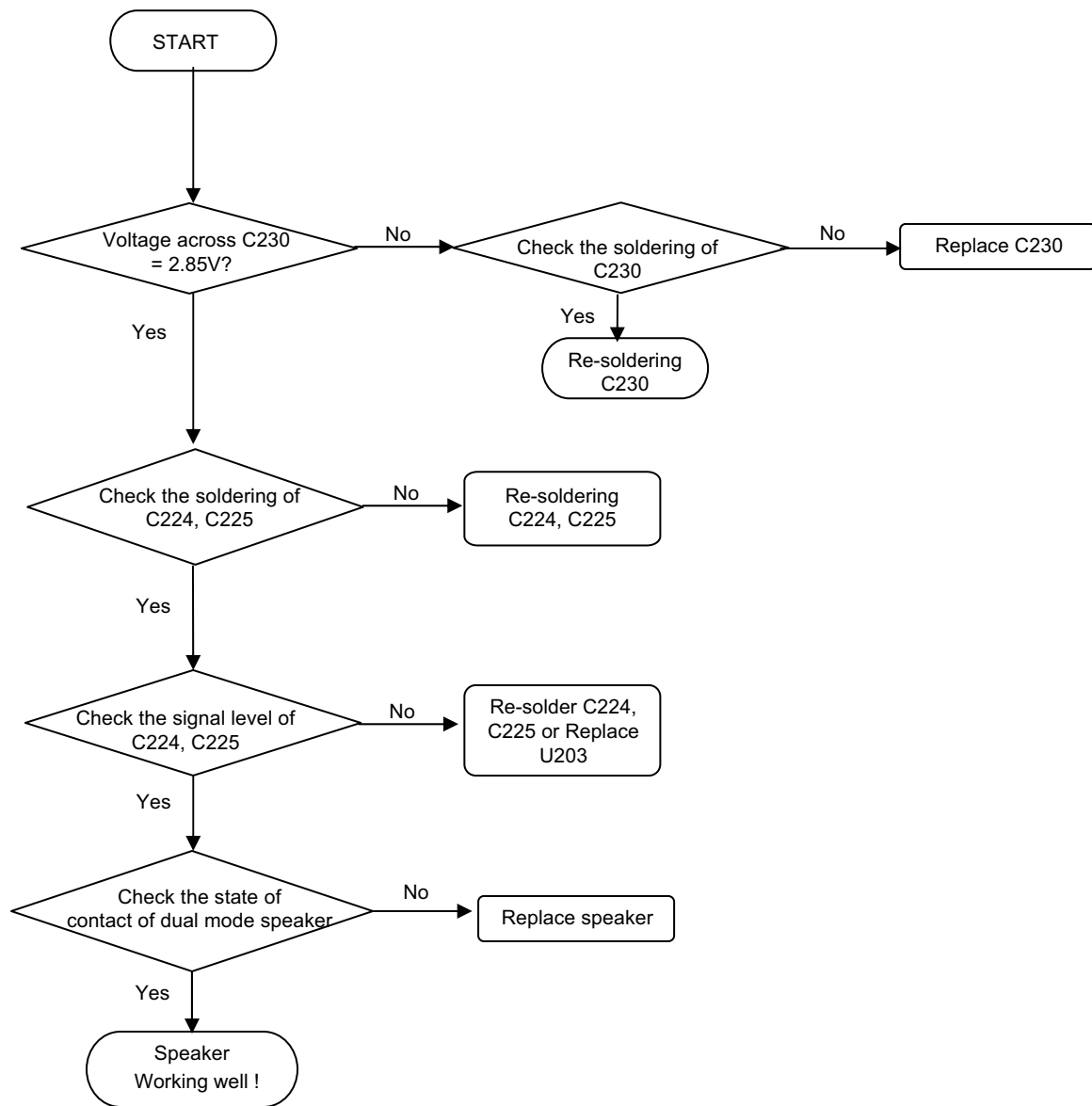


Figure 4-18

4. TROUBLE SHOOTING

Checking Flow



Test Points

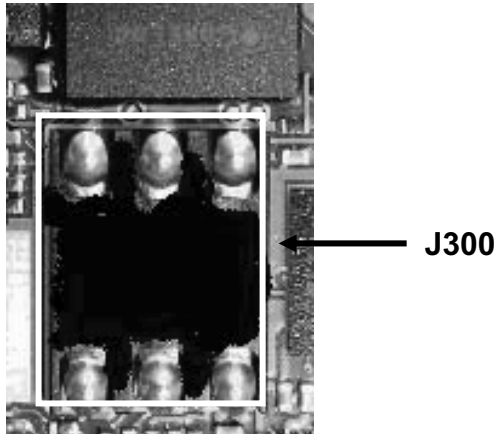
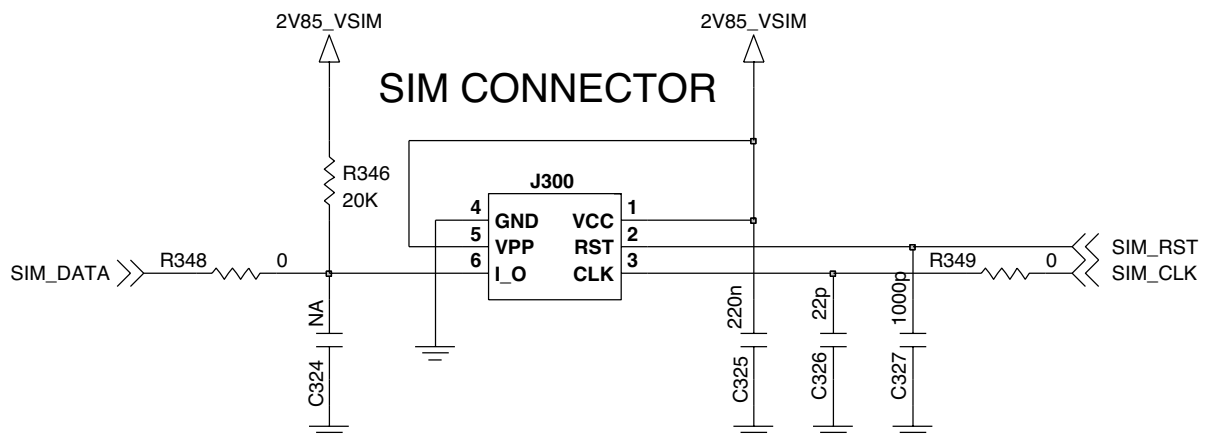


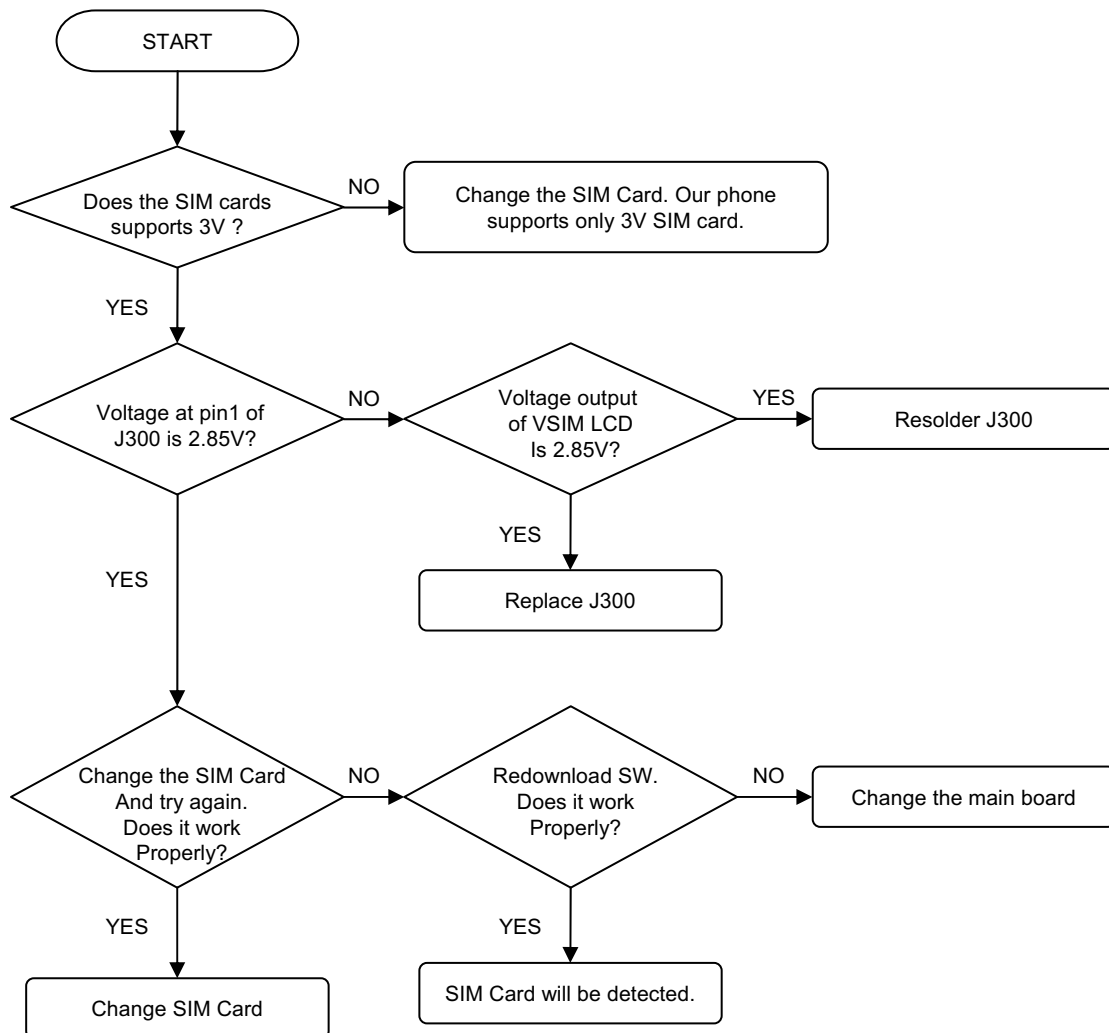
Figure 4-19

Circuit Diagram



4. TROUBLE SHOOTING

Checking Flow



4.9 Earphone Trouble

Test Points

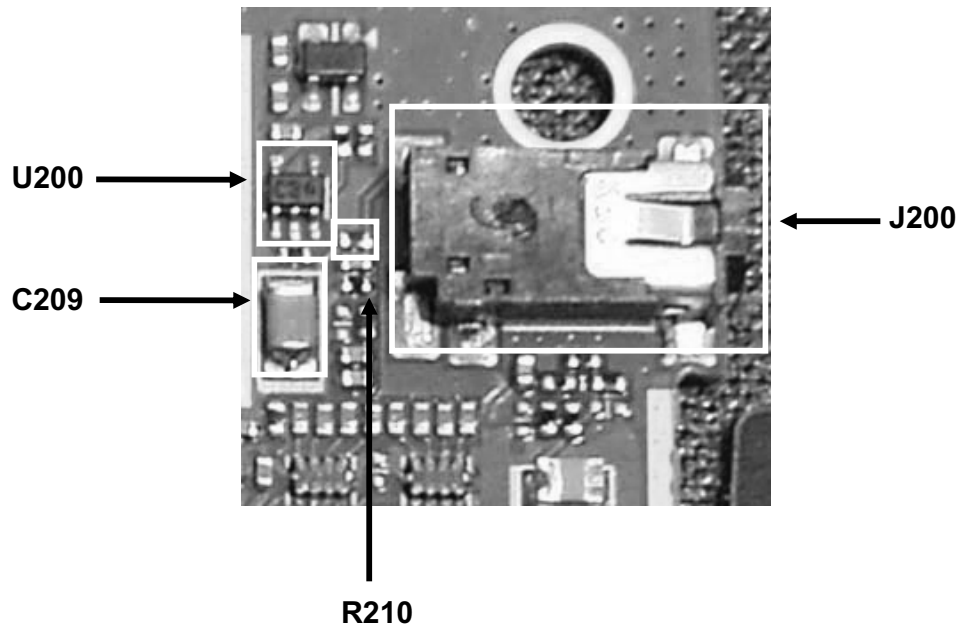
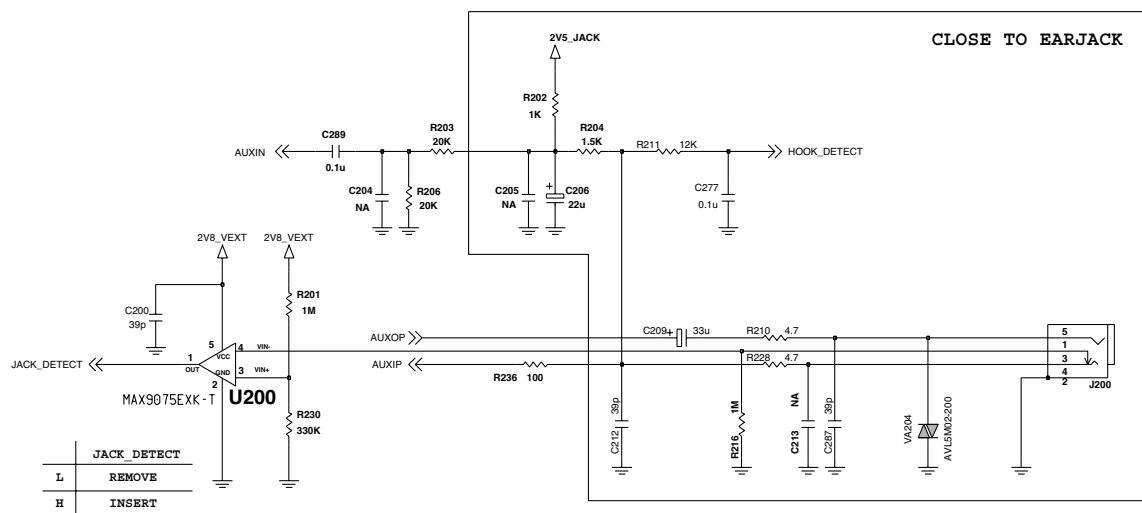


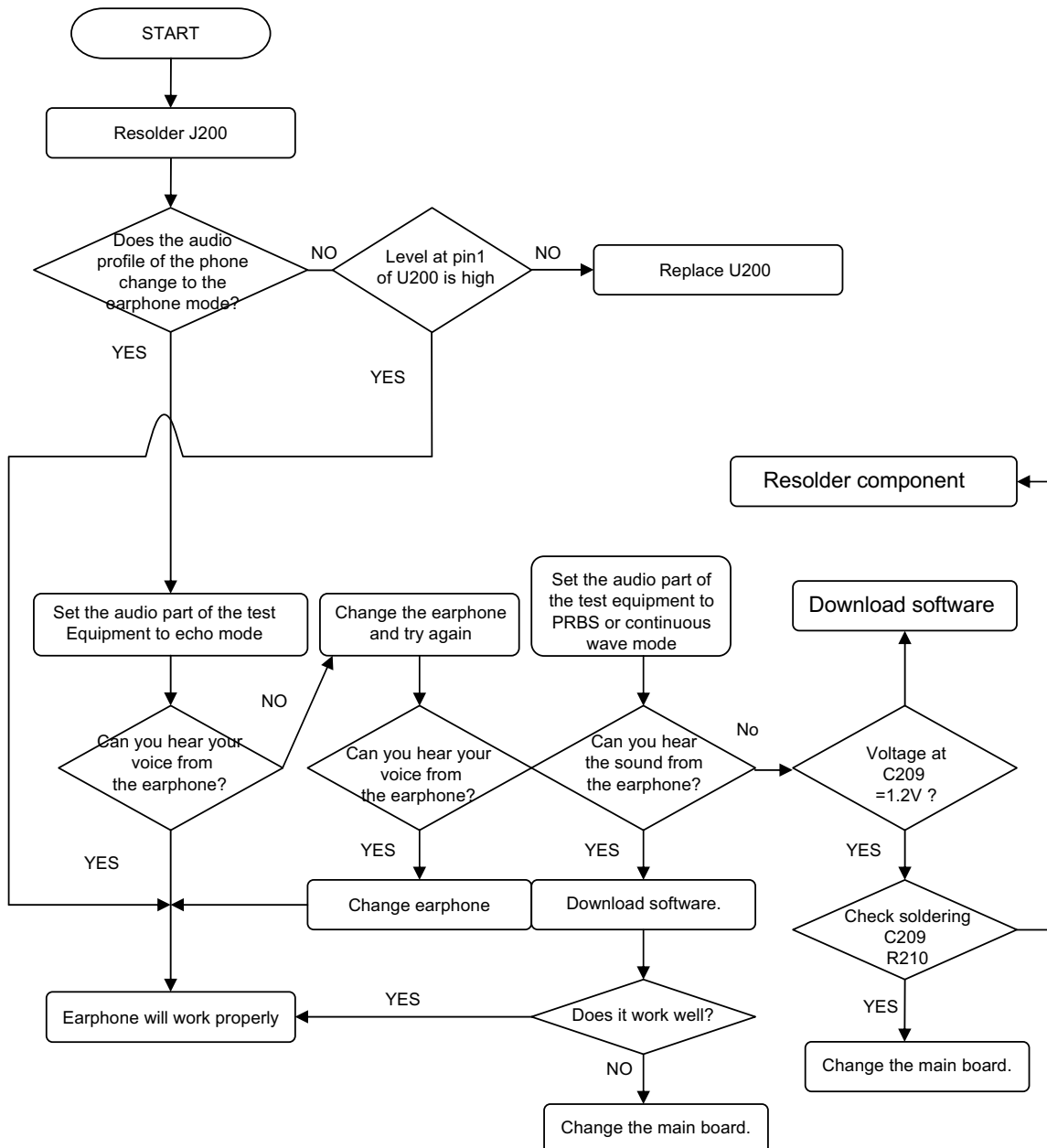
Figure 4-20

Circuit Diagram



4. TROUBLE SHOOTING

Checking Flow



4.10 KEY backlight Trouble

Test Points

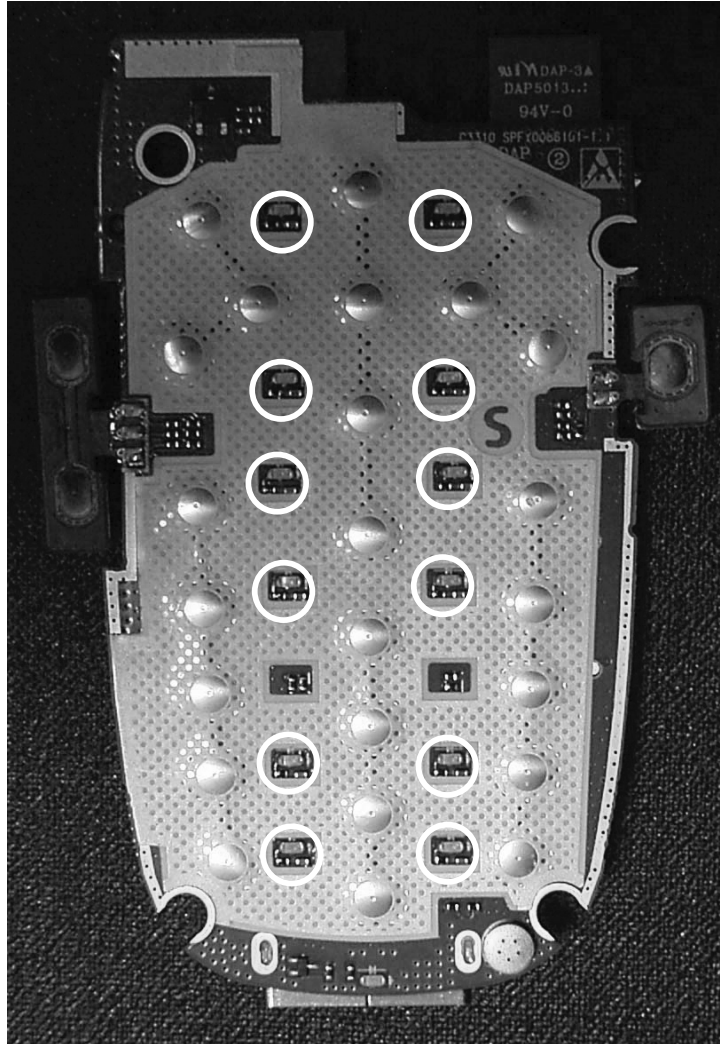
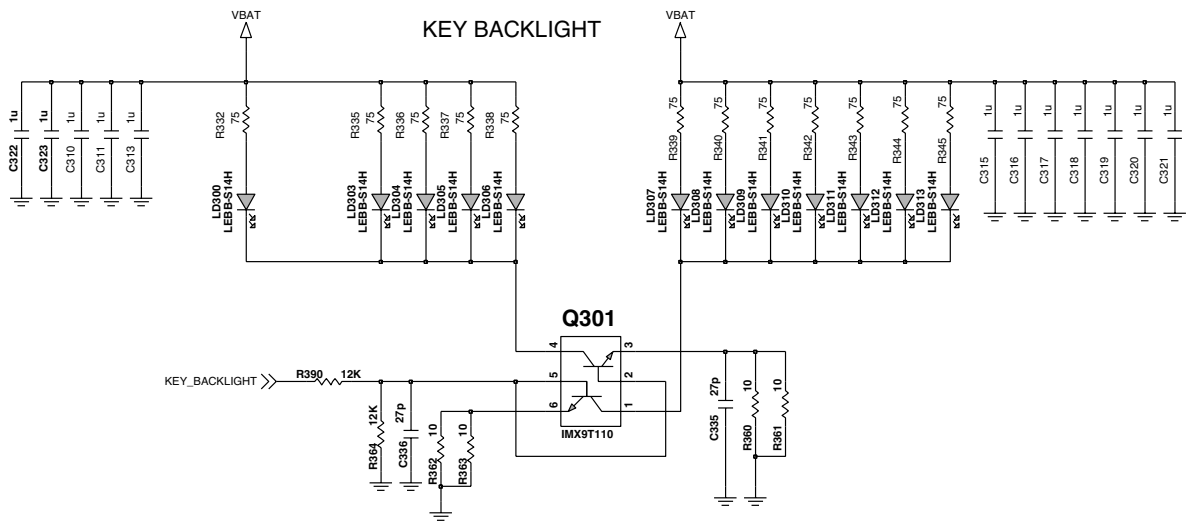


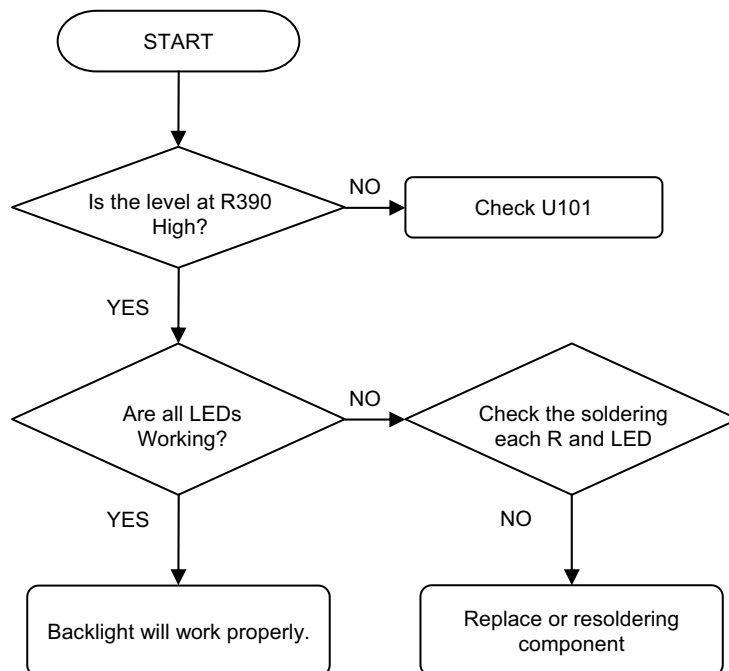
Figure 4-21

4. TROUBLE SHOOTING

Circuit Diagram



Checking Flow



4.11 Receiver Trouble

Test Points

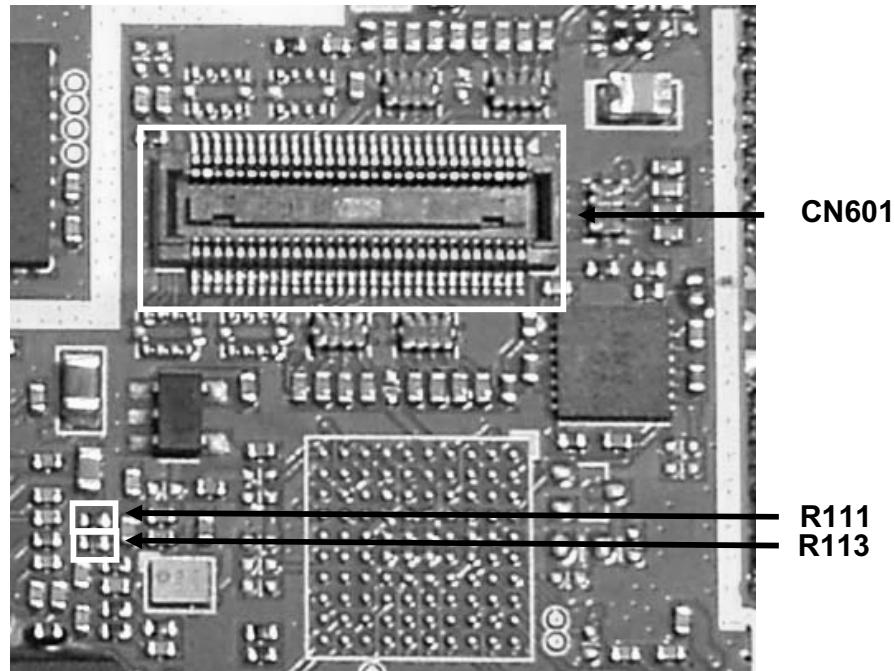
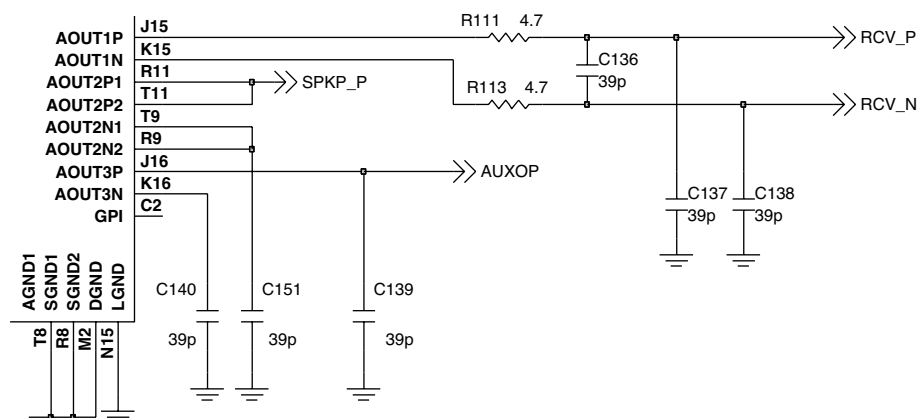


Figure 4-22

Circuit Diagram

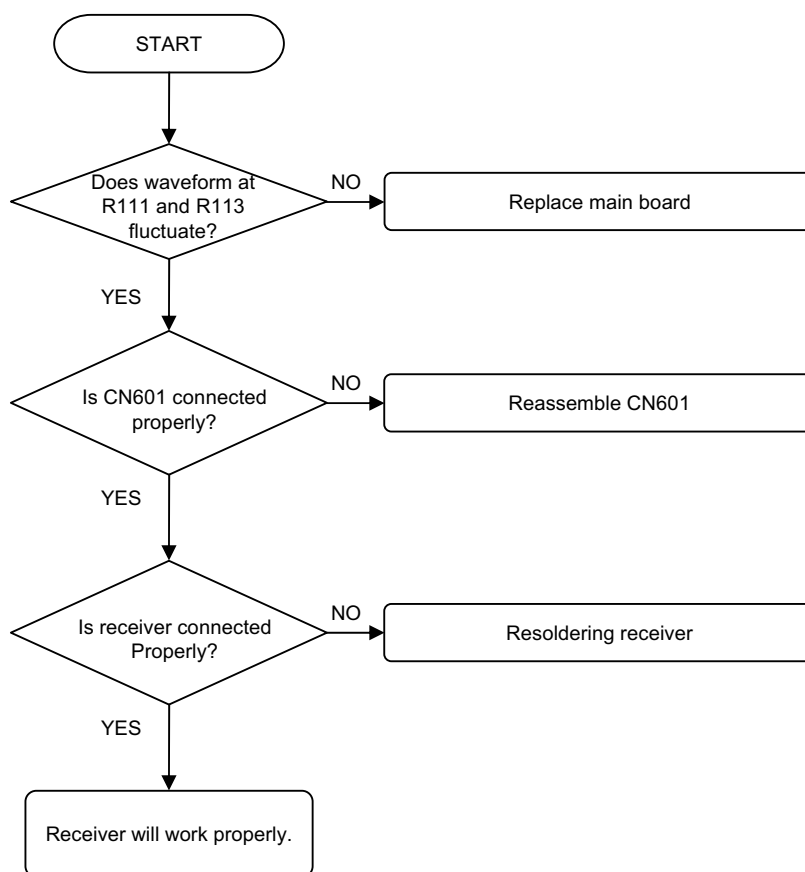


4. TROUBLE SHOOTING

Checking Flow

SETTING : After initialize Agilent 8960, Test EGSM, DCS mode

Set the property of audio as PRBS or continuous wave. Set the receiving volume of mobile as Max.



4.12 Microphone Trouble

Test Points

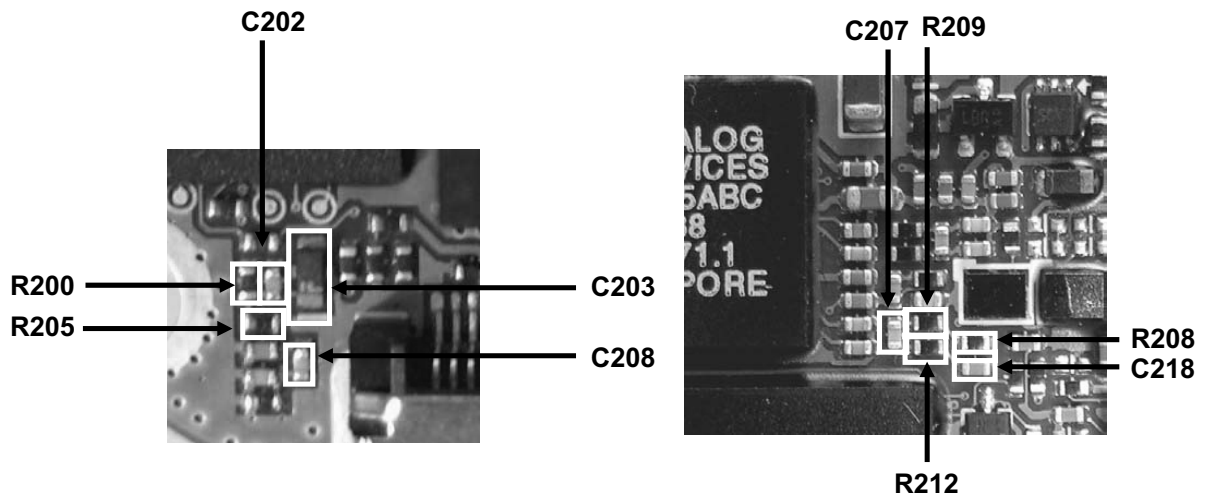
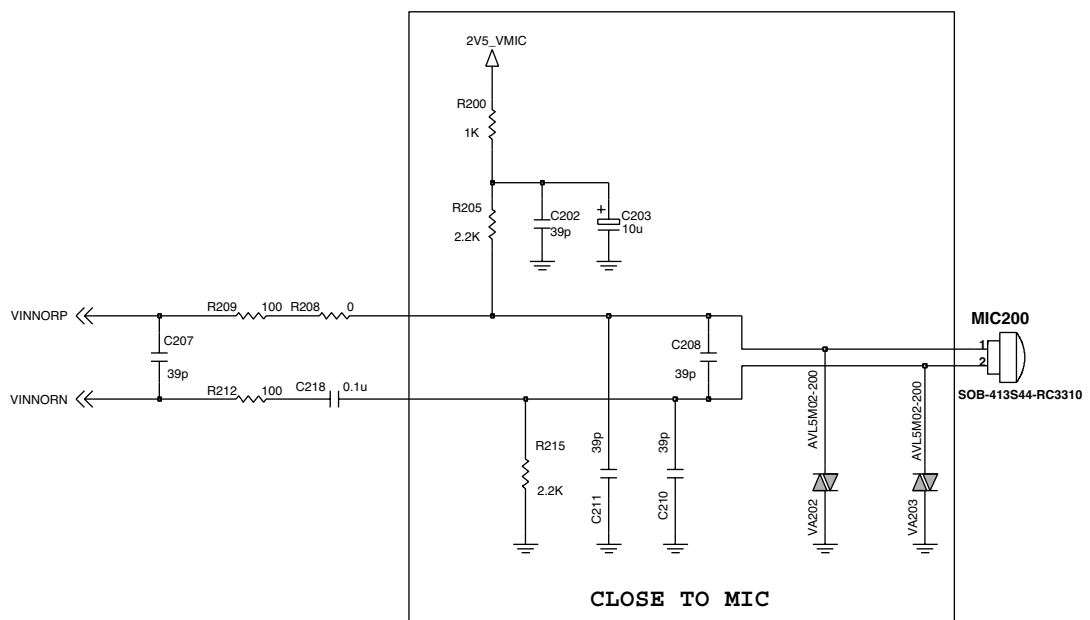


Figure 4-23

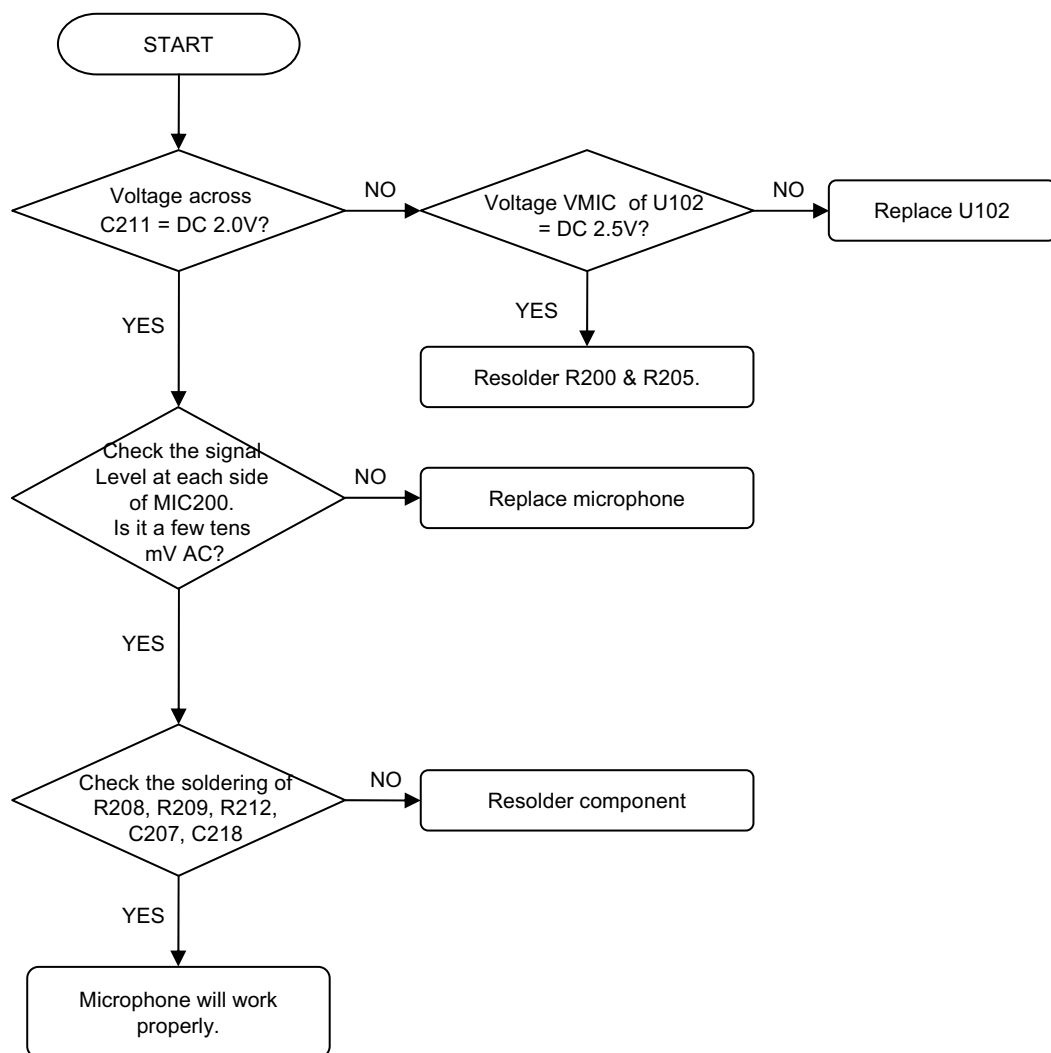
Circuit Diagram



4. TROUBLE SHOOTING

Checking Flow

SETTING : After initialize Agilent 8960, Test EGSM, DCS mode



Test Points

Test Points

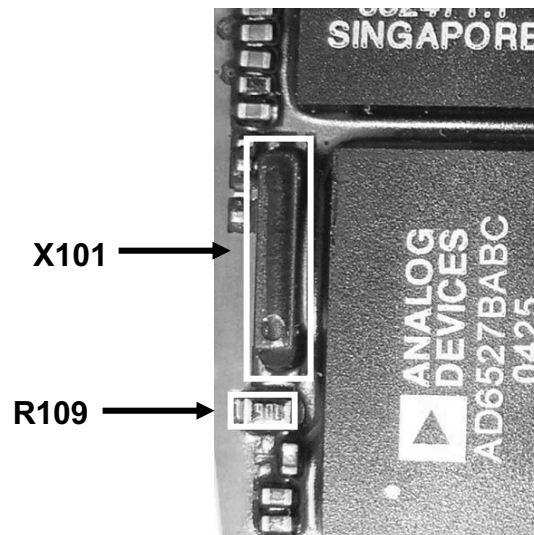
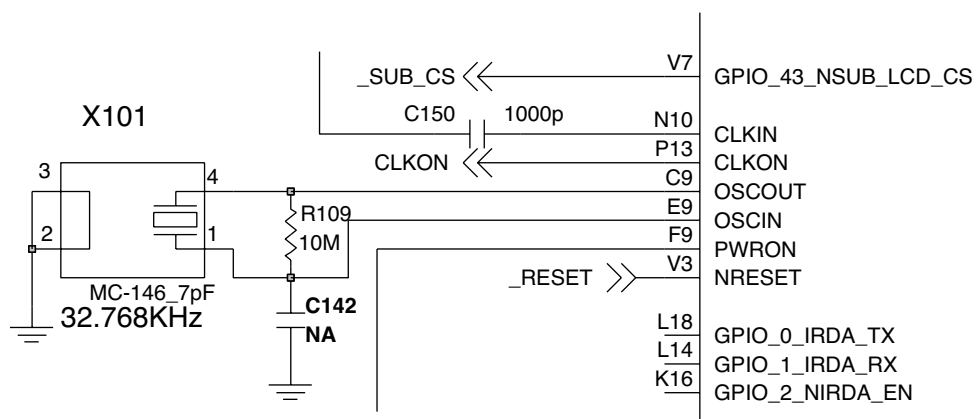


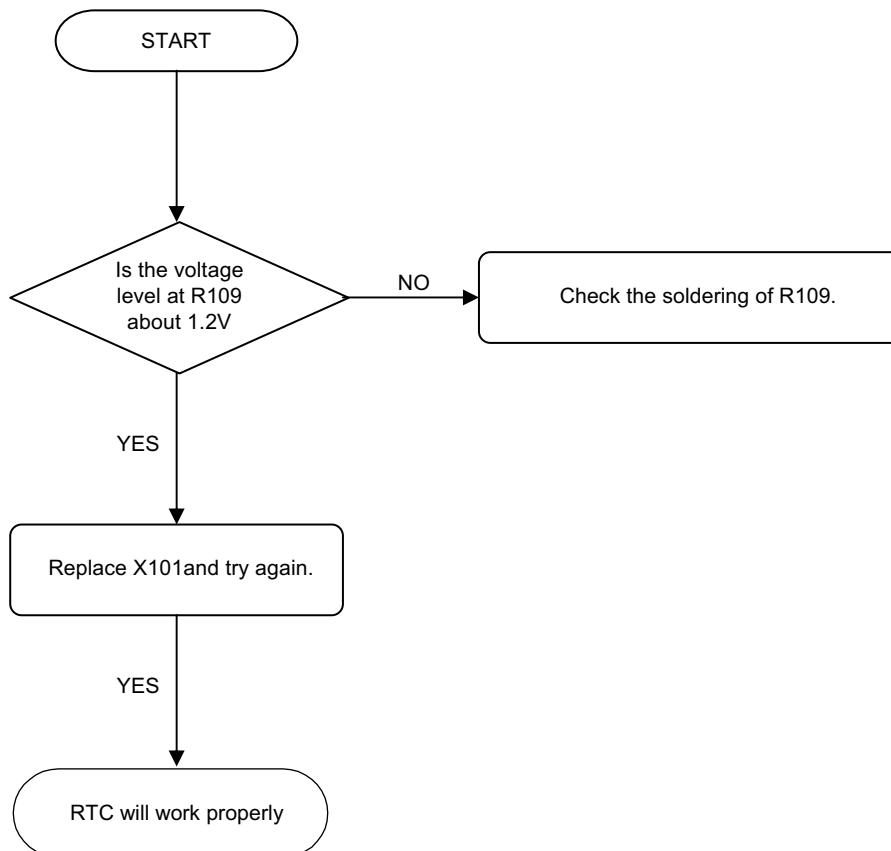
Figure 4-24

Circuit Diagram



4. TROUBLE SHOOTING

Checking Flow



4.14 Indication LED Trouble

Test Points

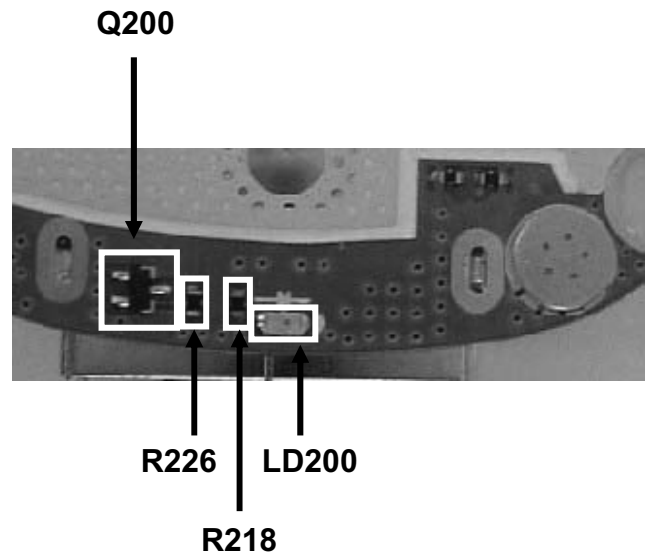
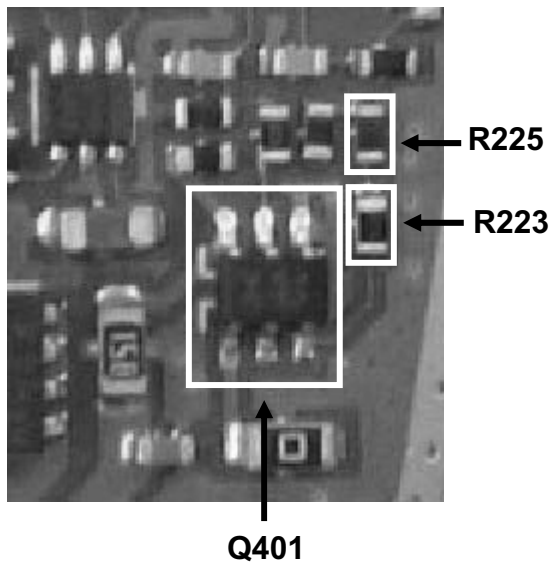
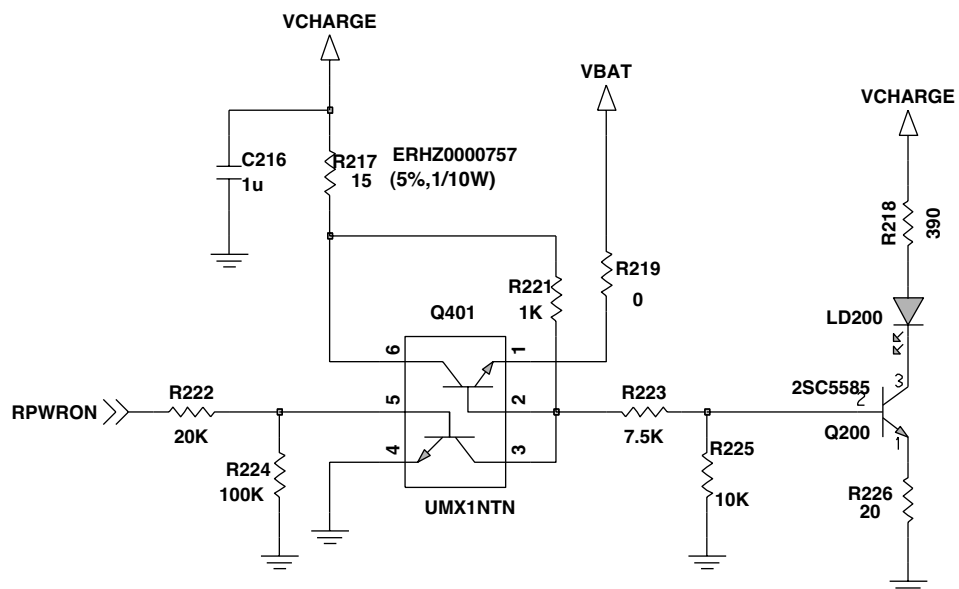


Figure 4-25

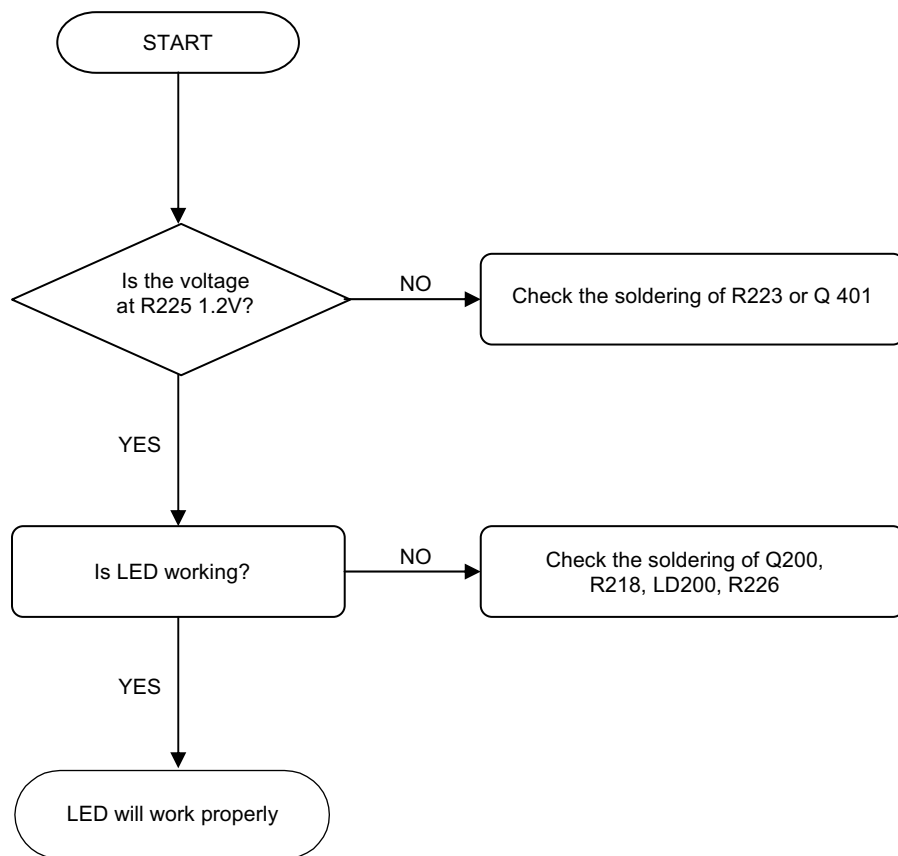
Circuit Diagram



4. TROUBLE SHOOTING

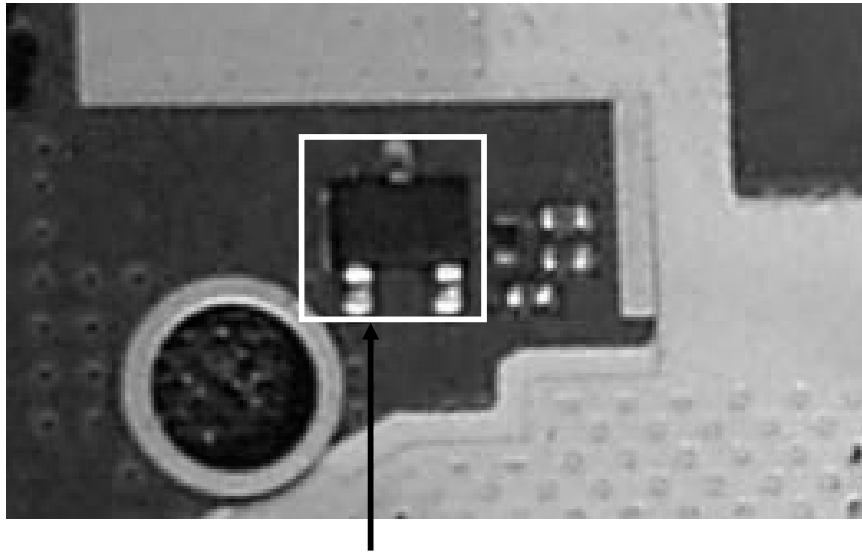
Checking Flow

Indication LED only operates in trickle charging mode.



4.15 Folder on/off Trouble

Test Points

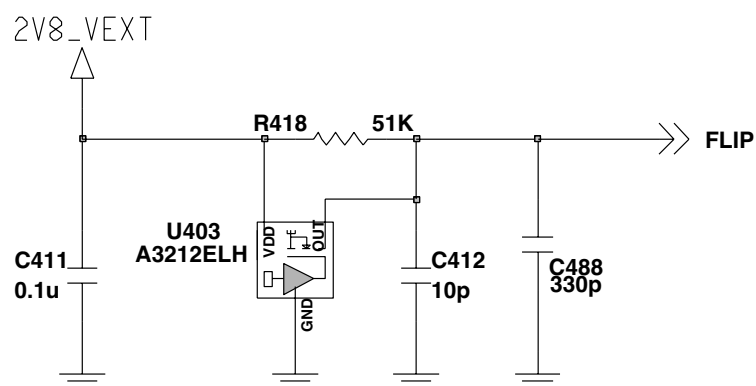


U403

Figure 4-26

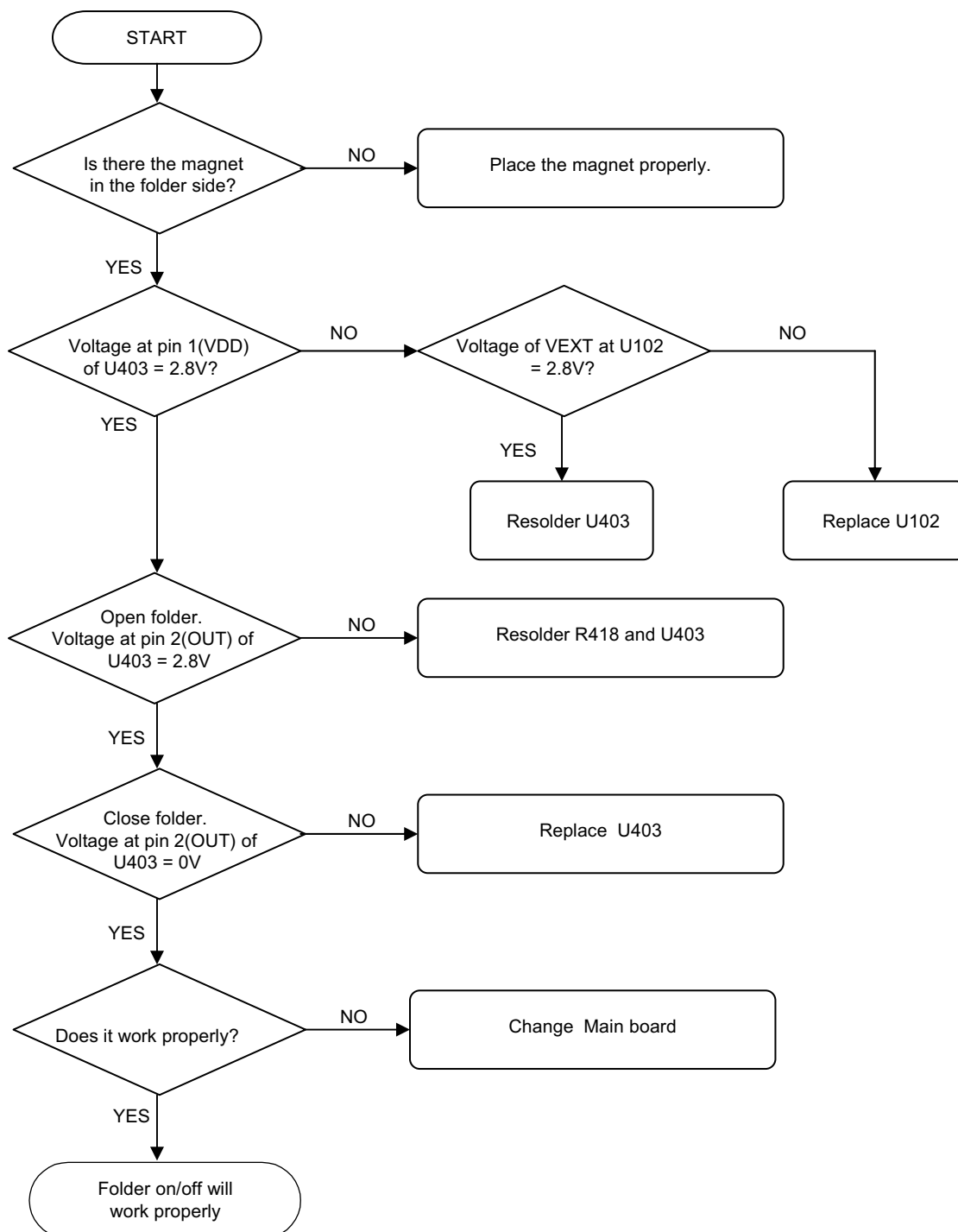
Circuit Diagram

FLIP SWITCH



4. TROUBLE SHOOTING

Checking Flow



5. DOWNLOAD AND CALIBRATION

5.1 Download

A. Download Setup

Figure 6-1 describes Download setup

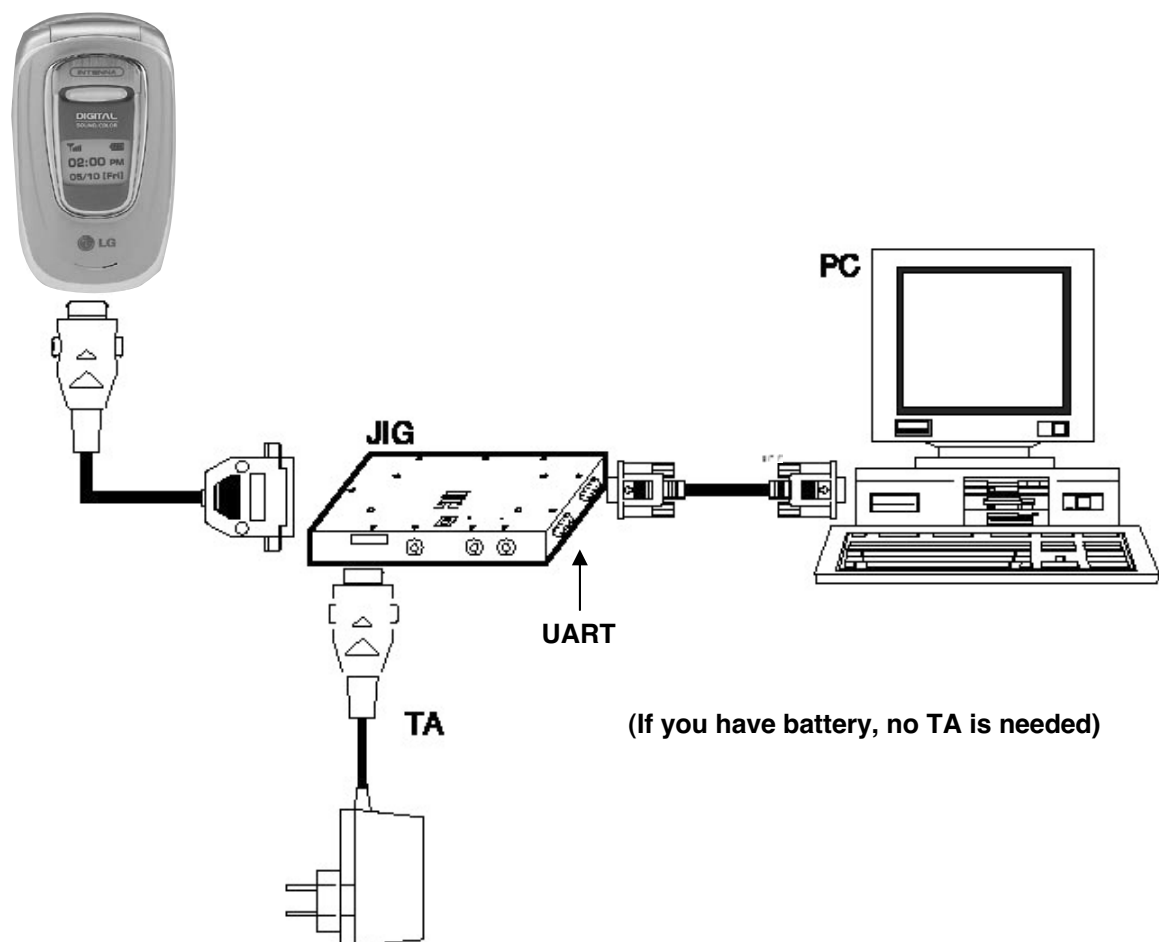
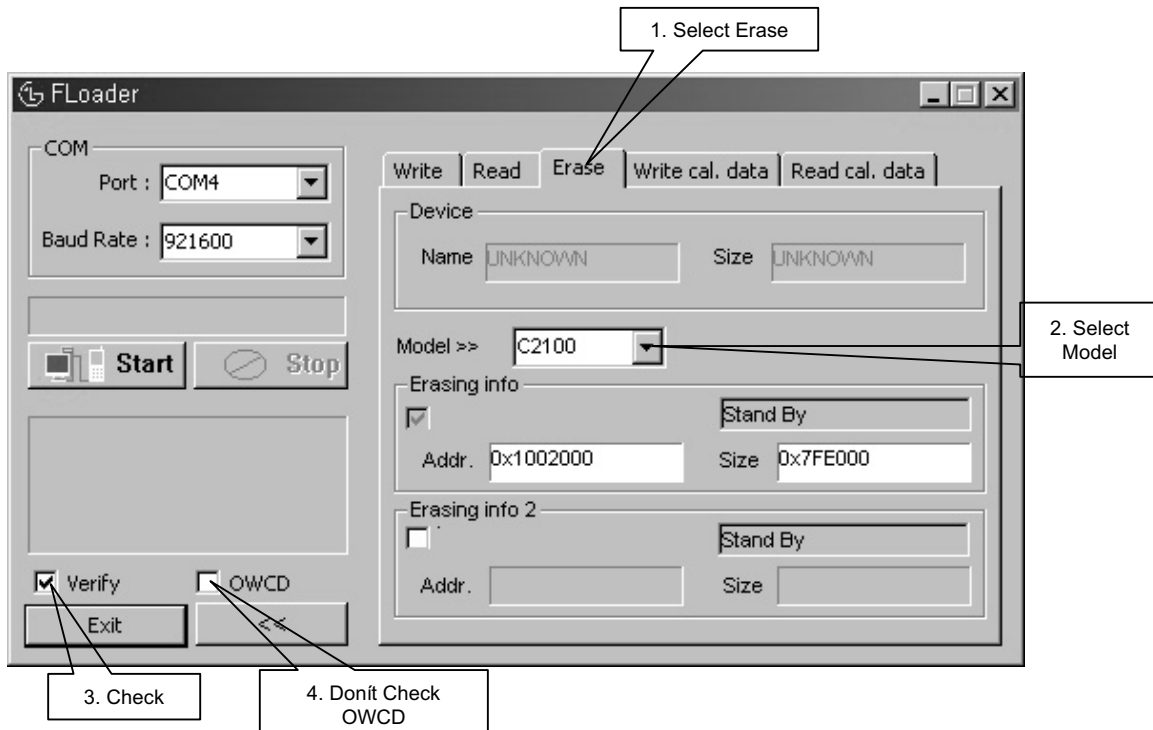


Figure 5-1. Download Setup

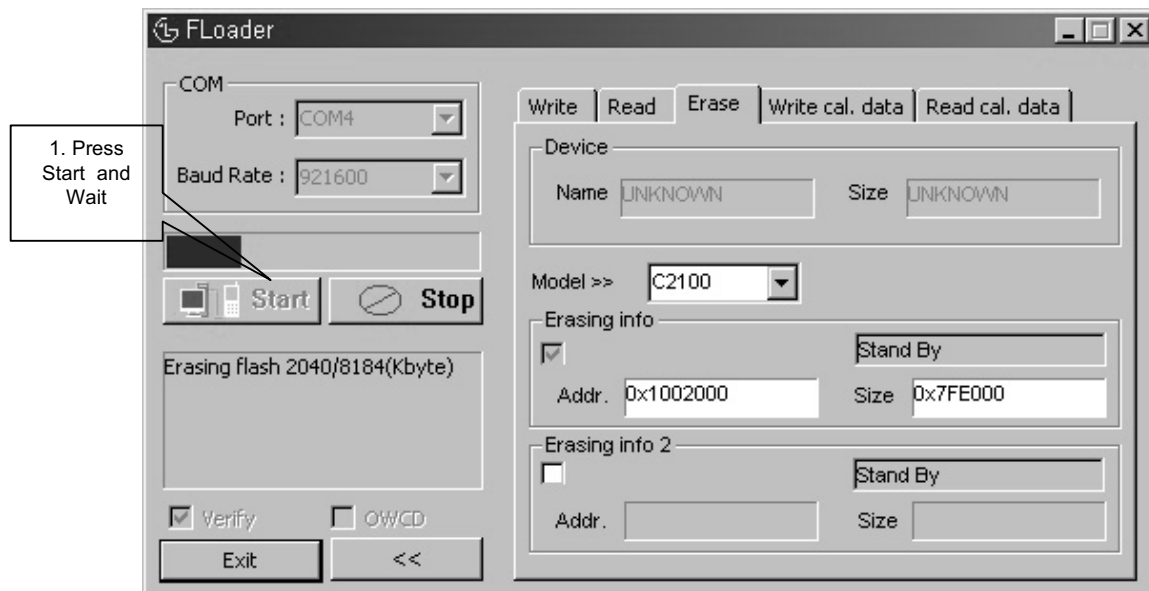
5. DOWNLOAD AND CALIBRATION

B. Download Procedure

1. Access Flash loader program in PC and select Erase.(Don't check OWCD)

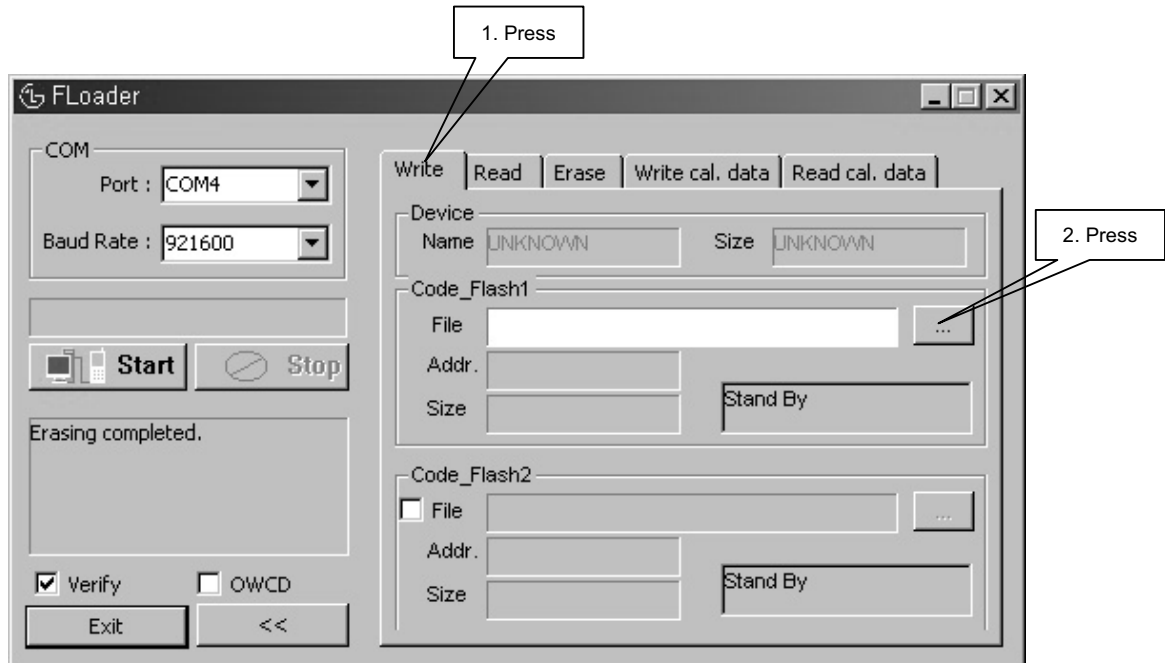


2. Press Start and Wait until Erase is completed.

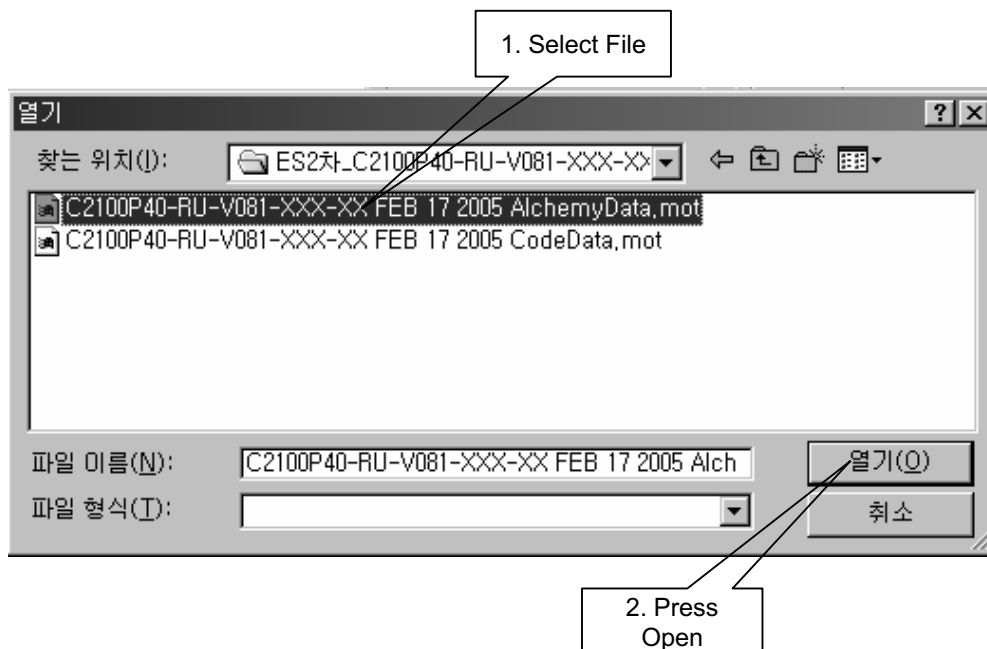


5. DOWNLOAD AND CALIBRATION

3. Press Write to start Download and press  Key to choose software (AlchemyData.mot)

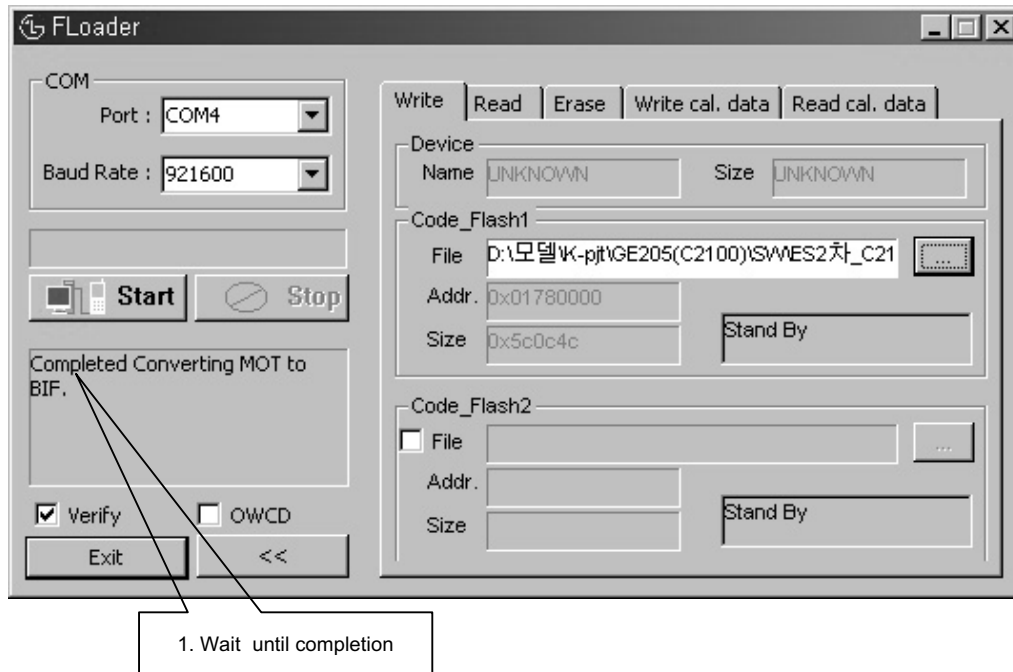


4. Choose software

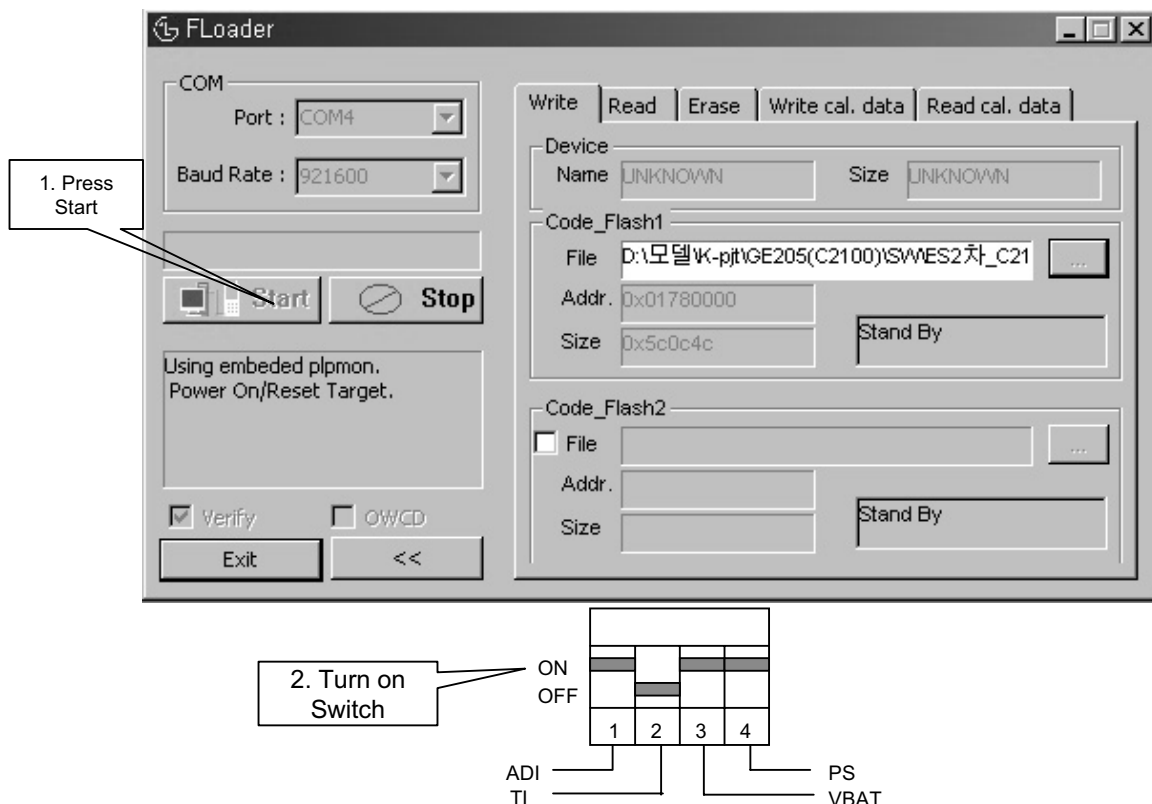


5. DOWNLOAD AND CALIBRATION

5. Wait until converting from MOT to BIF is completed (Don't check OWCD)

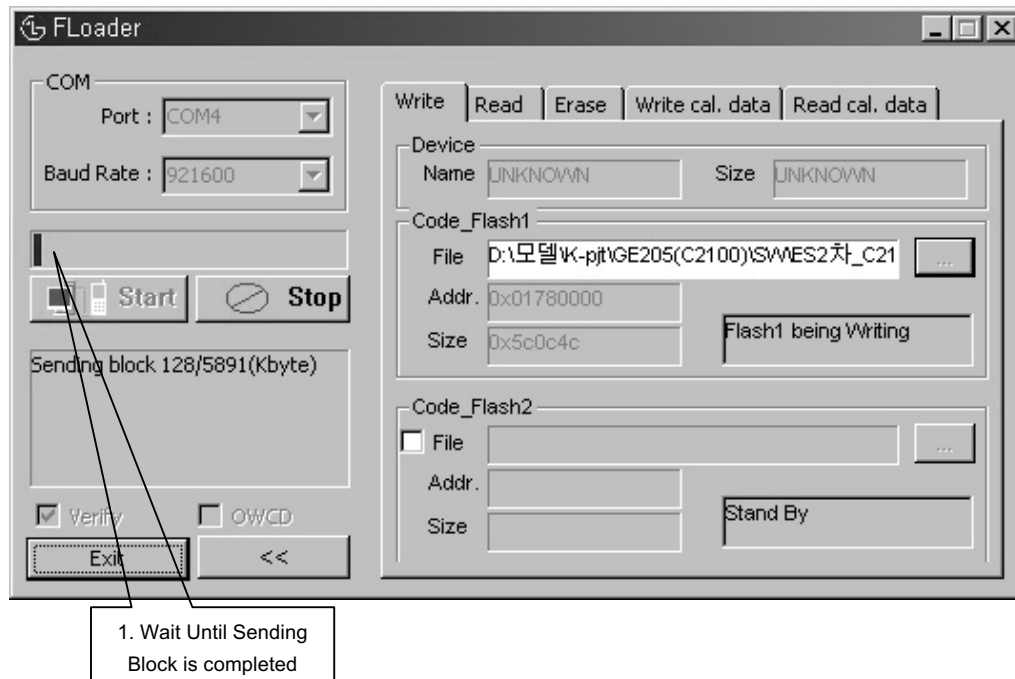


6. Press Start and Power on the phone using JIG remote Power on (Switch 1)

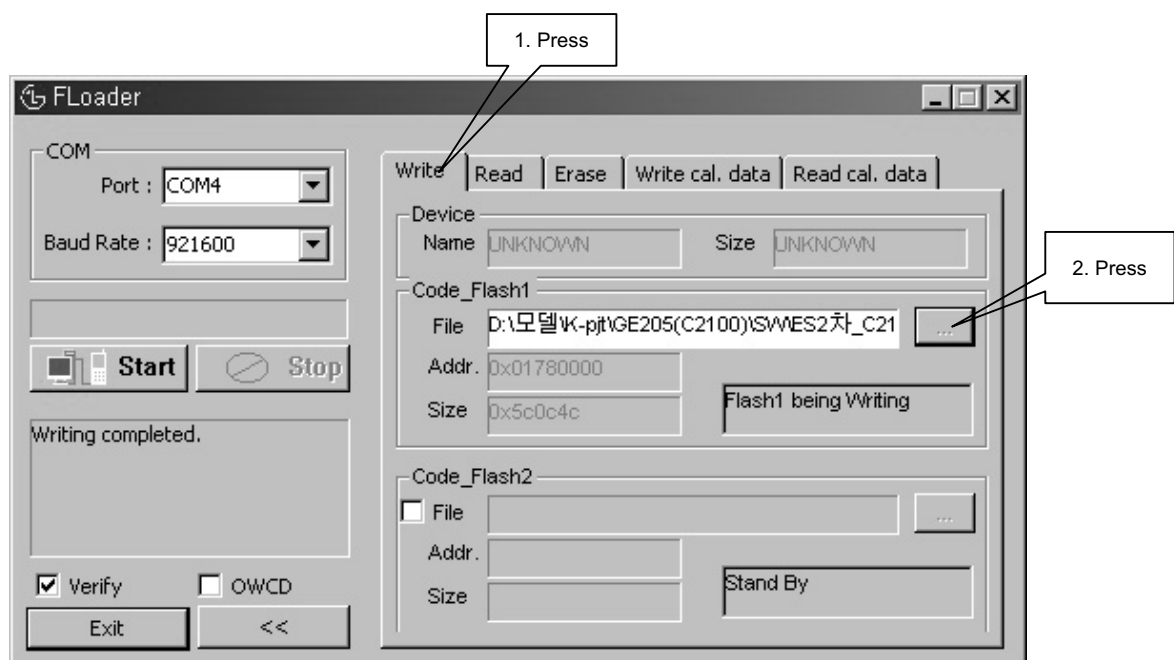


5. DOWNLOAD AND CALIBRATION

7. Wait until Sending Block is completed

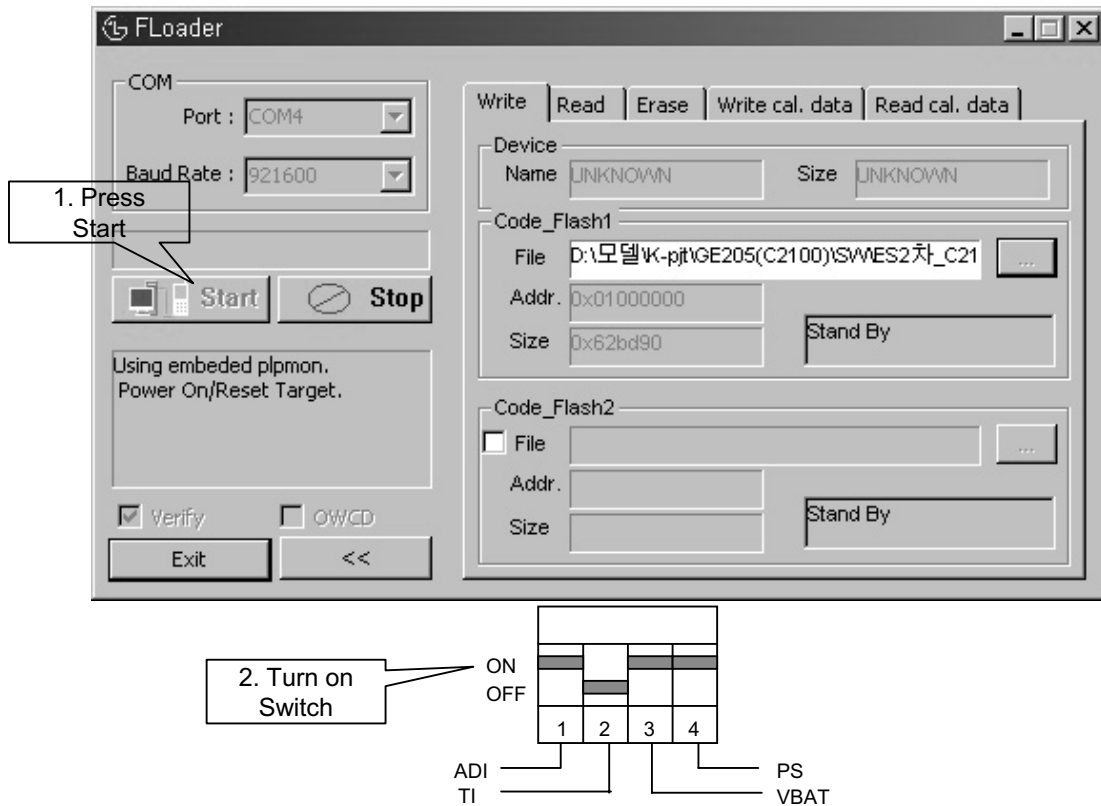


8. Press Write to start Download and press  Key to choose software (CodeData.mot)

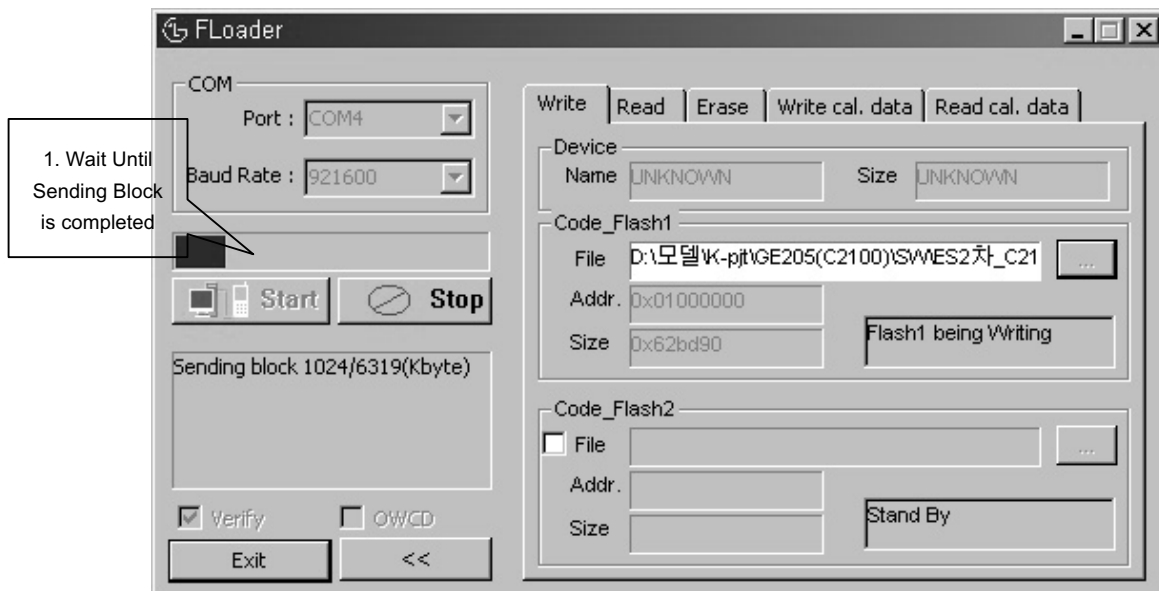


5. DOWNLOAD AND CALIBRATION

9. Choose software, Press Start and Power on the phone using JIG remote Power on (Switch 1)



10. Wait until Sending Block is completed



5. DOWNLOAD AND CALIBRATION

5.2 Calibration

A. Equipment List

Table 5-1. Calibration Equipment List

| Equipment for Calibration | Type / Model | Brand |
|-----------------------------------|-------------------------------|---------|
| Wireless Communication Test Set | HP-8960 | Agilent |
| RS-232 Cable and Test JIG | | LG |
| RF Cable | | LG |
| Power Supply | HP-66311B | Agilent |
| GPIO interface card | HP-GPIO | Agilent |
| Calibration & Final test software | | LG |
| Test SIM Card | | |
| PC (for Software Installation) | Pentium II class above 300MHz | |

B. Equipment Setup

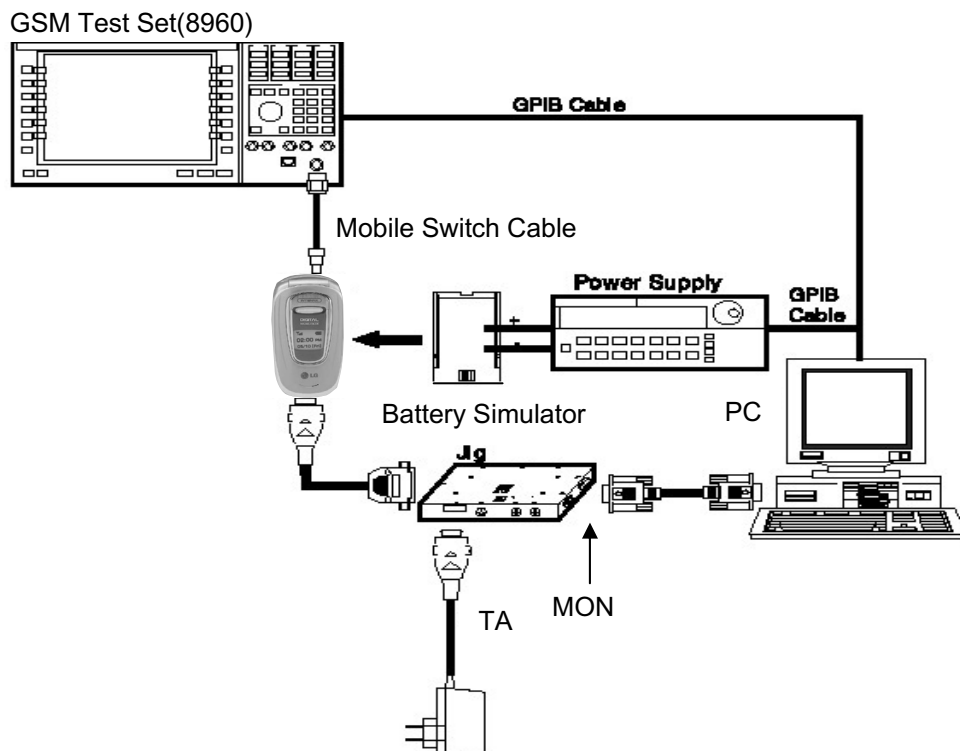


Figure 5-2. Equipment Setup

5. DOWNLOAD AND CALIBRATION

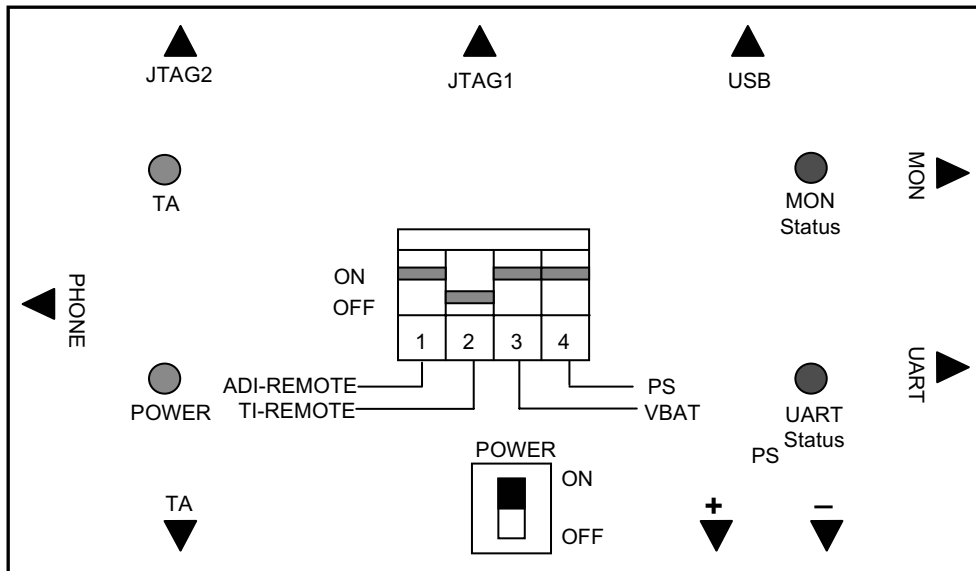


Figure 5-3 The top view of Test JIG

C. Test Jig Operation

Table 5-2 Jig Power

| Power Source | Description |
|----------------|---------------------------------|
| Power Supply | usually 4.0V |
| Travel Adaptor | Use TA, name is TA-25GR2(24pin) |

Table 5-3 Jig DIP Switch

| Switch Number | Name | Description |
|---------------|------------|---|
| Switch 1 | ADI-REMOTE | In ON state, phone is awaked. It is used ADI chipset. |
| Switch 2 | TI-REMOTE | In ON state, phone is awaked. It is used TI chipset. |
| Switch 3 | VBAT | Power is provided for phone from battery |
| Switch 4 | PS | Power is provided for phone from Power supply |

5. DOWNLOAD AND CALIBRATION

Table 5-4 LED Description

| LED Number | Name | Description |
|------------|-------|--|
| LED 1 | Power | Power is provided for Test Jig. |
| LED 2 | TA | Indicate charging state of the phone battery |
| LED 3 | UART | Indicate data transfer state through the UART port |
| LED 4 | MON | Indicate data transfer state through the MON port |

1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3rd, 4th of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1st ON state

D. Procedure

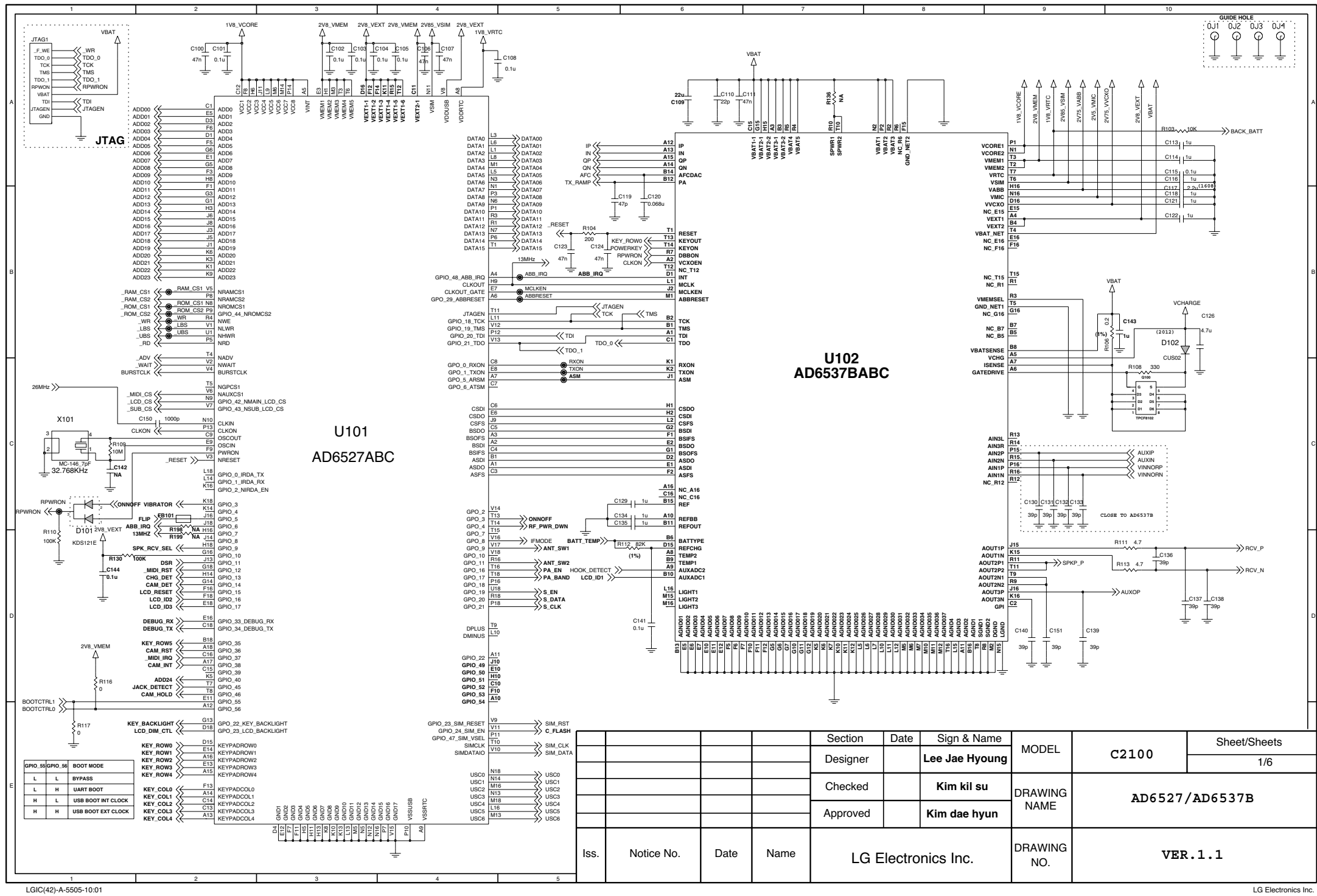
1. Connect as Fig 6-2 (RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Power ON PC then enter into Windows 98 (Remark : Windows 2000 system could be feasible)
3. Run AUTOCAL.exe, the AUTOCAL application window will be appeared.

6. BLOCK DIAGRAM

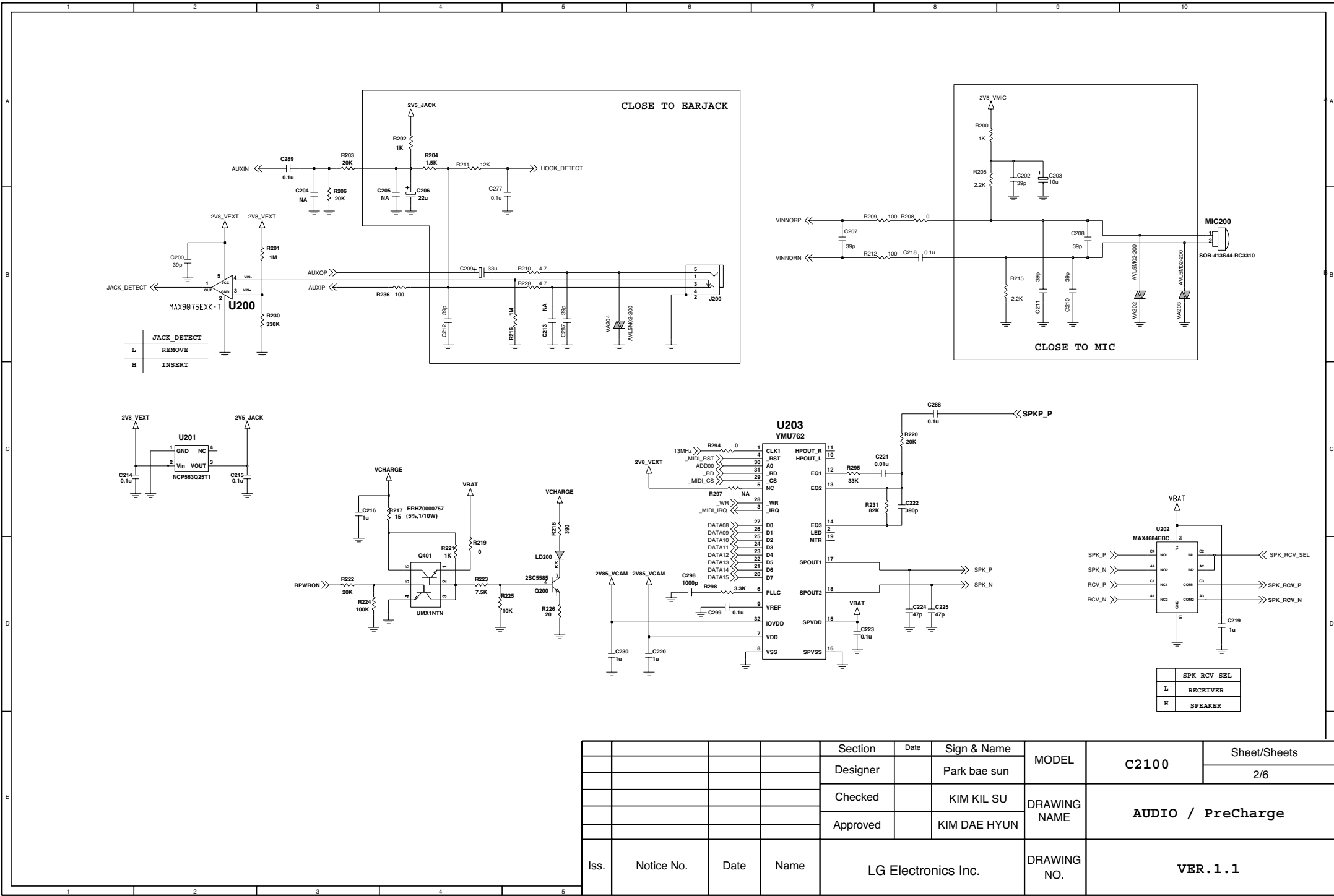
The diagram illustrates the system architecture of a mobile phone, organized into several functional blocks and their interconnections:

- RF Section (dashed box):** Includes an **ANT** (Antenna), **ANT Switch**, **LDO** (Low Drop Out regulator), **PAM** (Pulse Amplitude Modulation), **SAW Filter** (Surface Acoustic Wave Filter), and an **RF Transceiver**. The RF Transceiver is connected to a **26MHz** oscillator.
- Baseband Processor:** Consists of an **Analog Baseband (AD6537B)** and a **Digital Baseband (AD6527)**. The Analog Baseband is connected to the RF Transceiver and the Digital Baseband. The Digital Baseband is connected to a **32.768 KHz** oscillator and the Analog Baseband.
- IO Connector:** A central component that interfaces with the **ANT**, **ANT Switch**, **LDO**, **PAM**, **SAW Filter**, **RF Transceiver**, **Analog Baseband**, **Digital Baseband**, **Flip Switch**, **Memory**, **Backup battery**, **SPK & RCV**, **Vibrator**, **Torch**, **Main LCD & Sub LCD**, **Folder**, **Key pad**, **SIM Socket**, and **MIDI Chip**.
- Peripheral Devices:**
 - ANT** (Antenna)
 - ANT Switch**
 - LDO** (Low Drop Out regulator)
 - PAM** (Pulse Amplitude Modulation)
 - SAW Filter** (Surface Acoustic Wave Filter)
 - RF Transceiver**
 - 26MHz** oscillator
 - Analog Baseband (AD6537B)**
 - Digital Baseband (AD6527)**
 - 32.768 KHz** oscillator
 - Flip Switch**
 - Memory (128M Flash + 64M SRAM)**
 - Backup battery**
 - SPK & RCV** (Speaker and Receiver)
 - Vibrator**
 - Torch**
 - Main LCD & Sub LCD**
 - Folder**
 - Key pad**
 - SIM Socket**
 - MIDI Chip**
 - Charge Pump**
 - Switch**
 - Ear Jack**
 - MIC** (Microphone)

7. CIRCUIT DIAGRAM



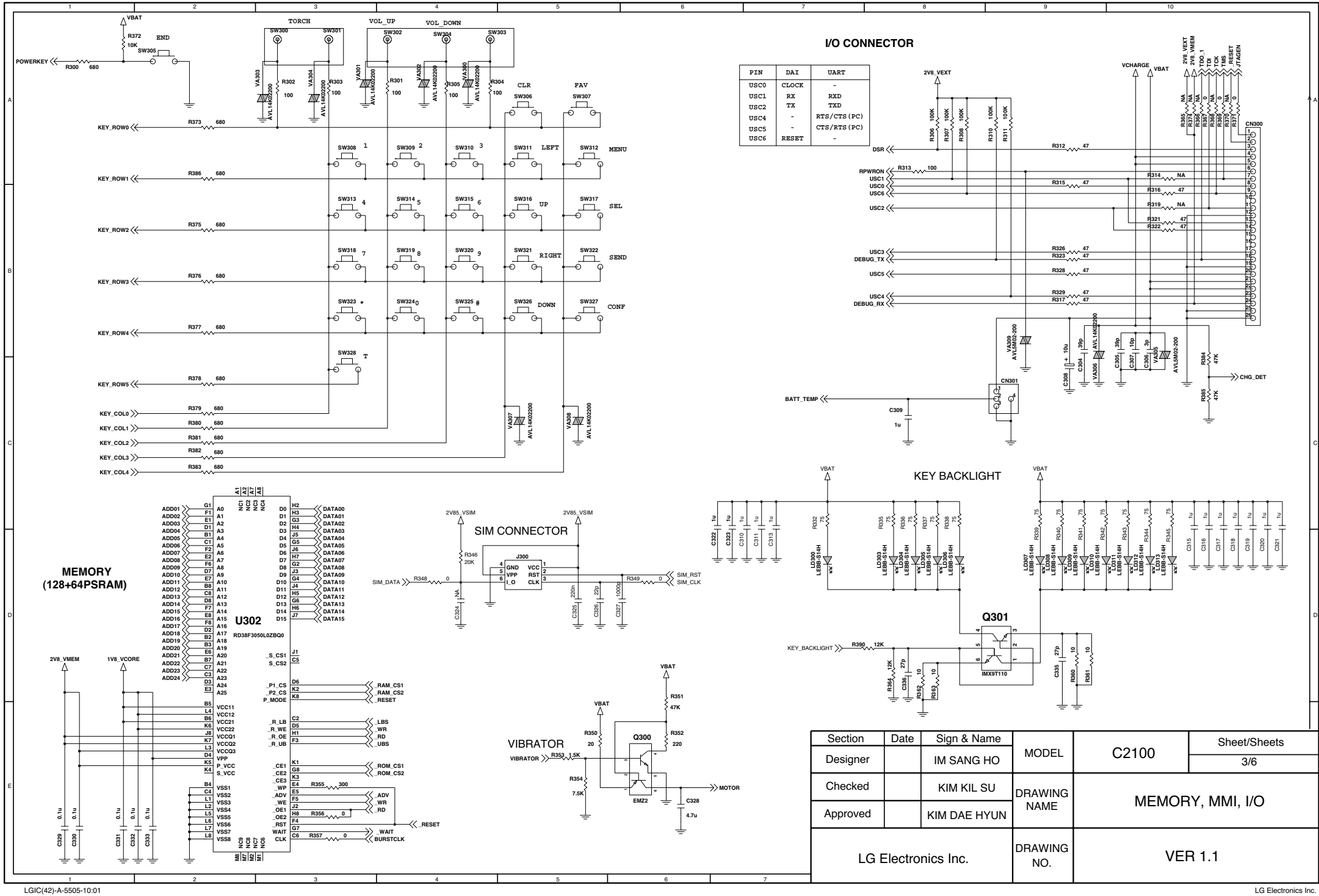
7. CIRCUIT DIAGRAM



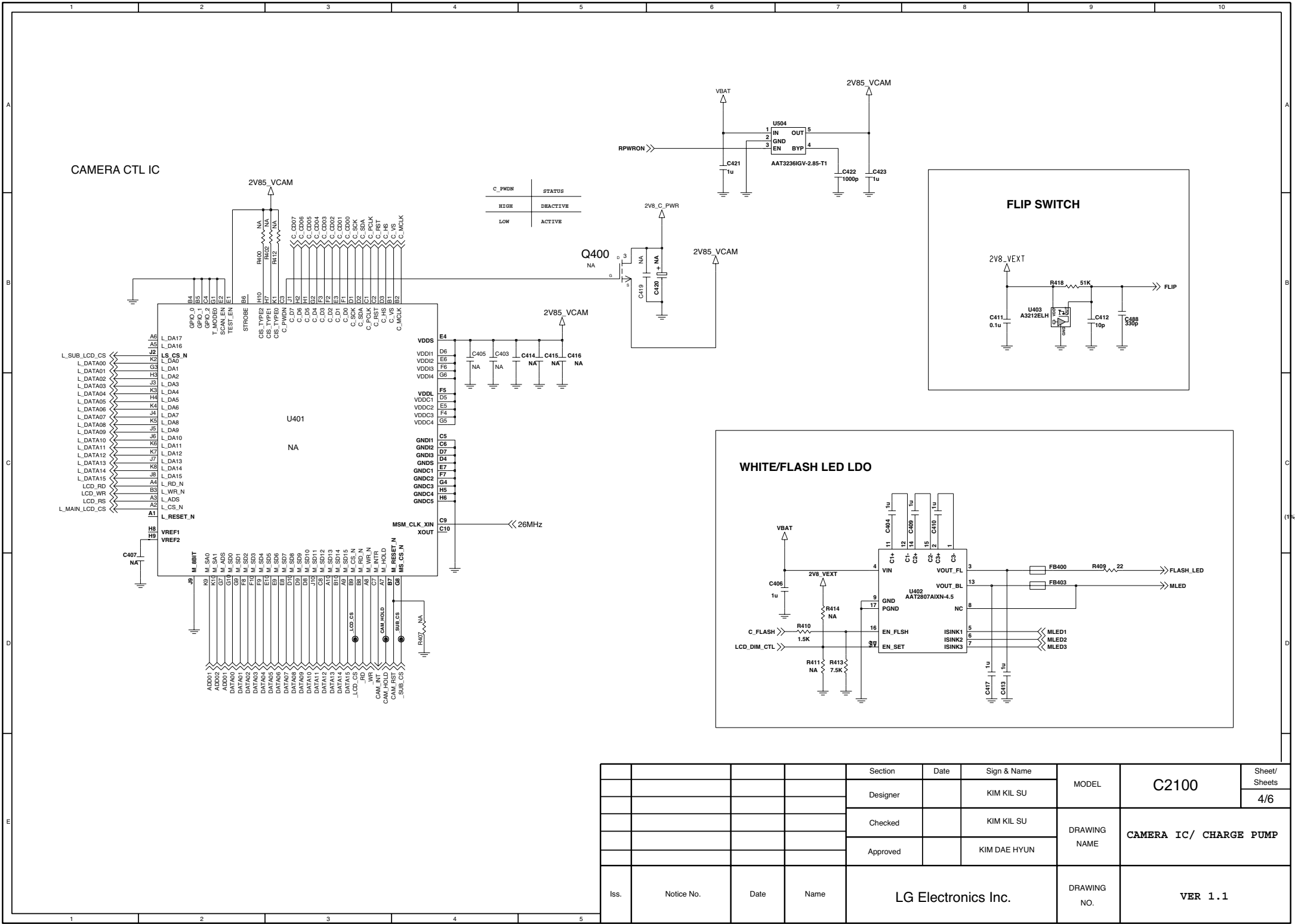
LGIC(42)-A-5505-10:01

LG Electronics Inc.

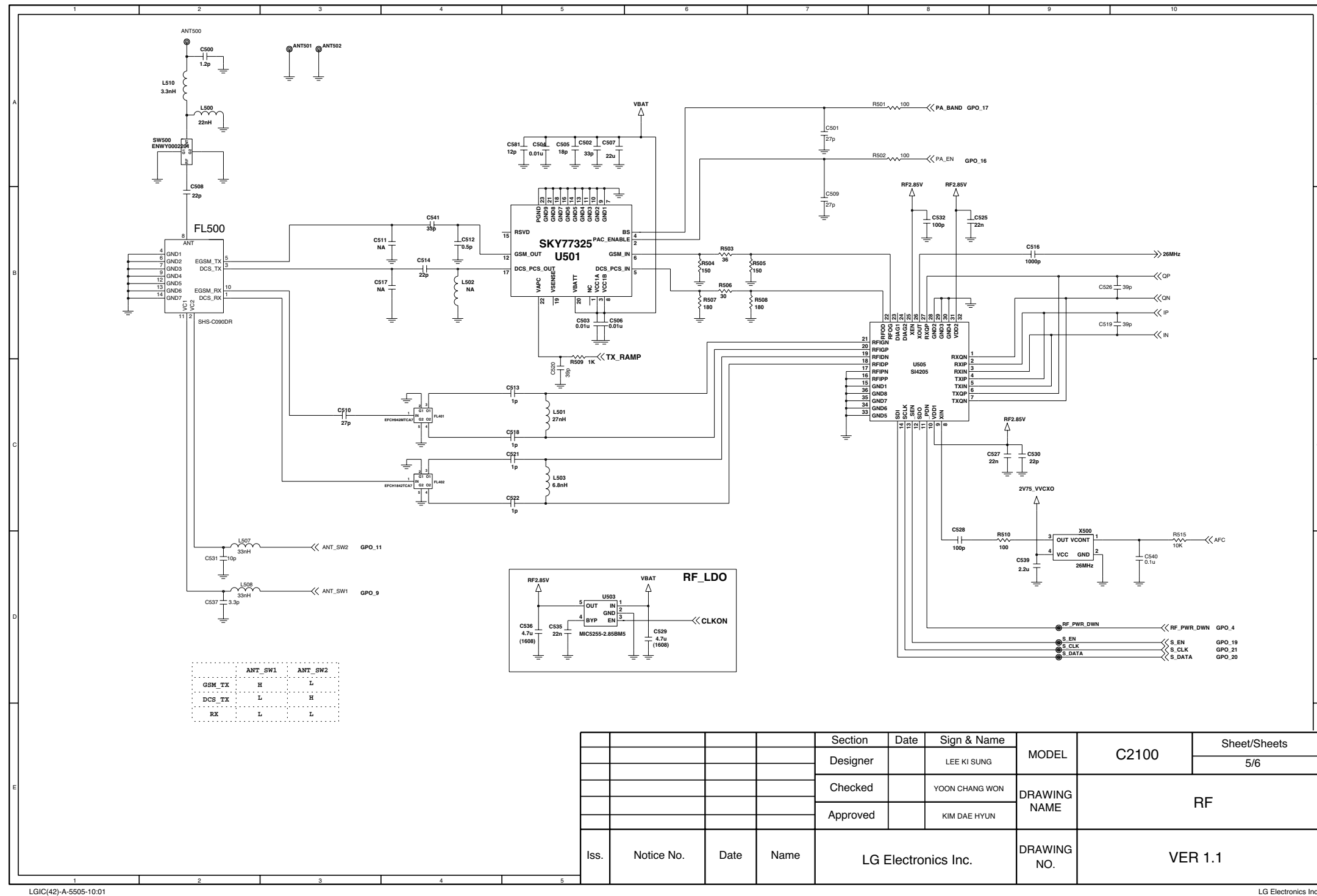
7. CIRCUIT DIAGRAM



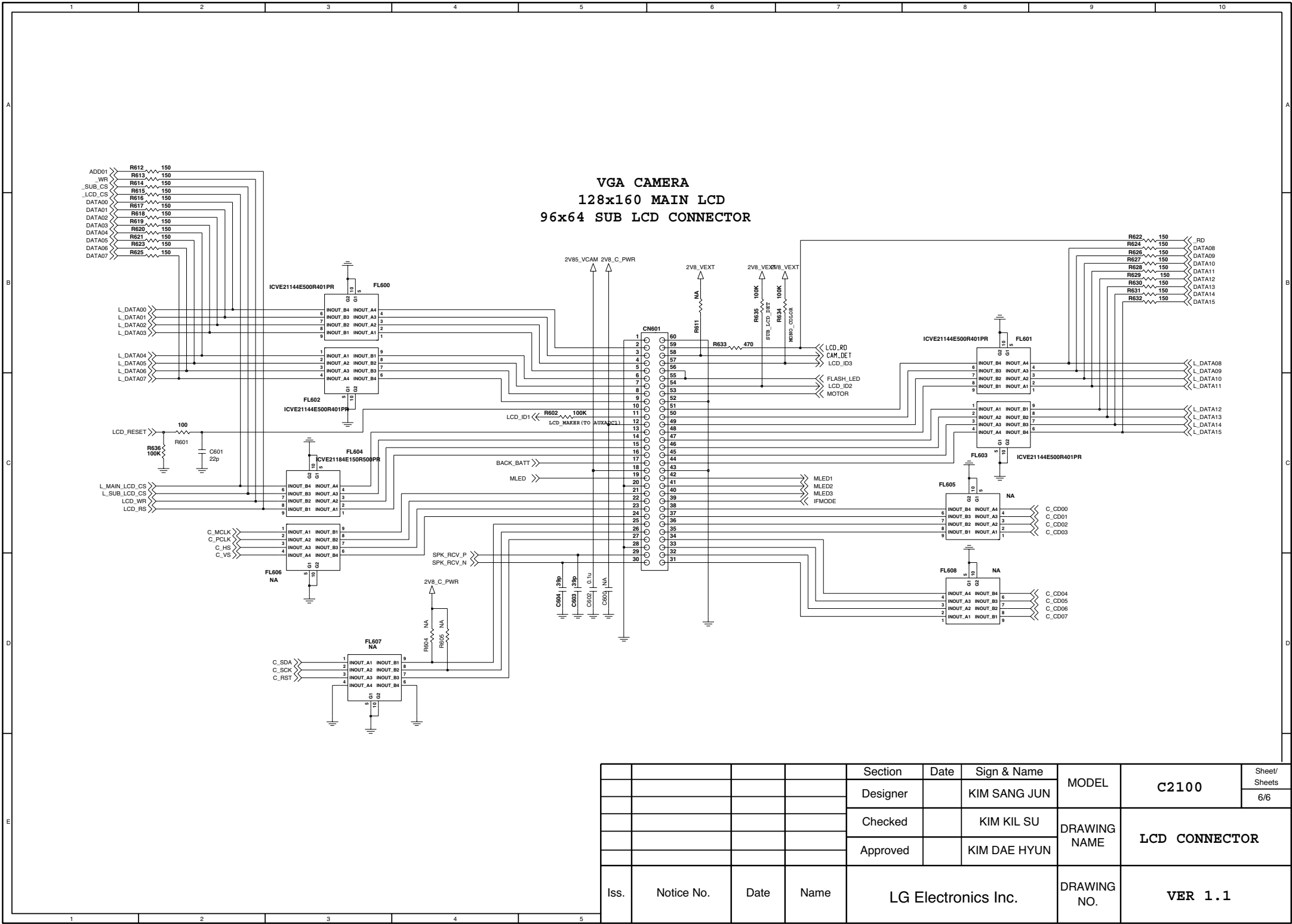
7. CIRCUIT DIAGRAM



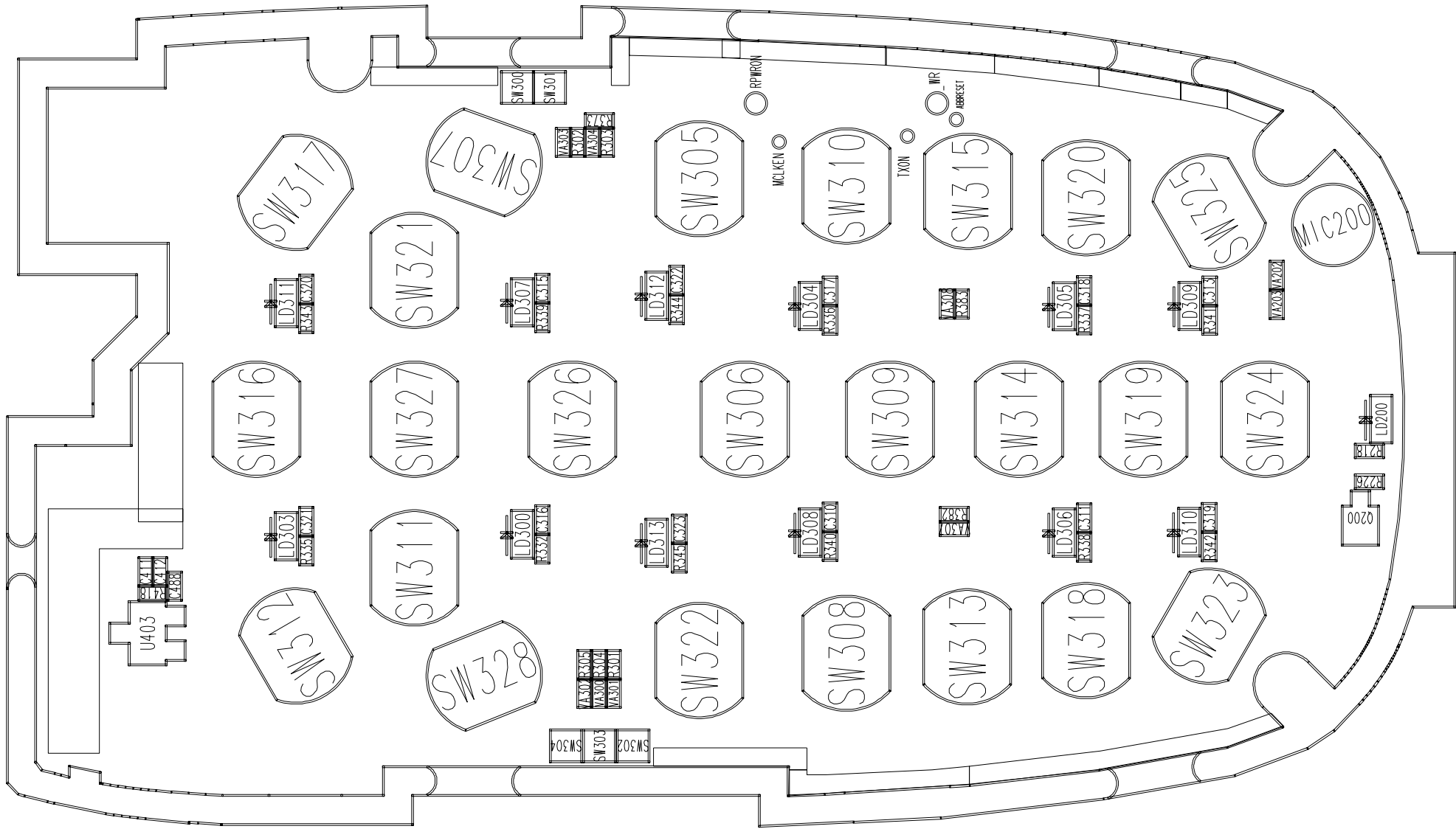
7. CIRCUIT DIAGRAM



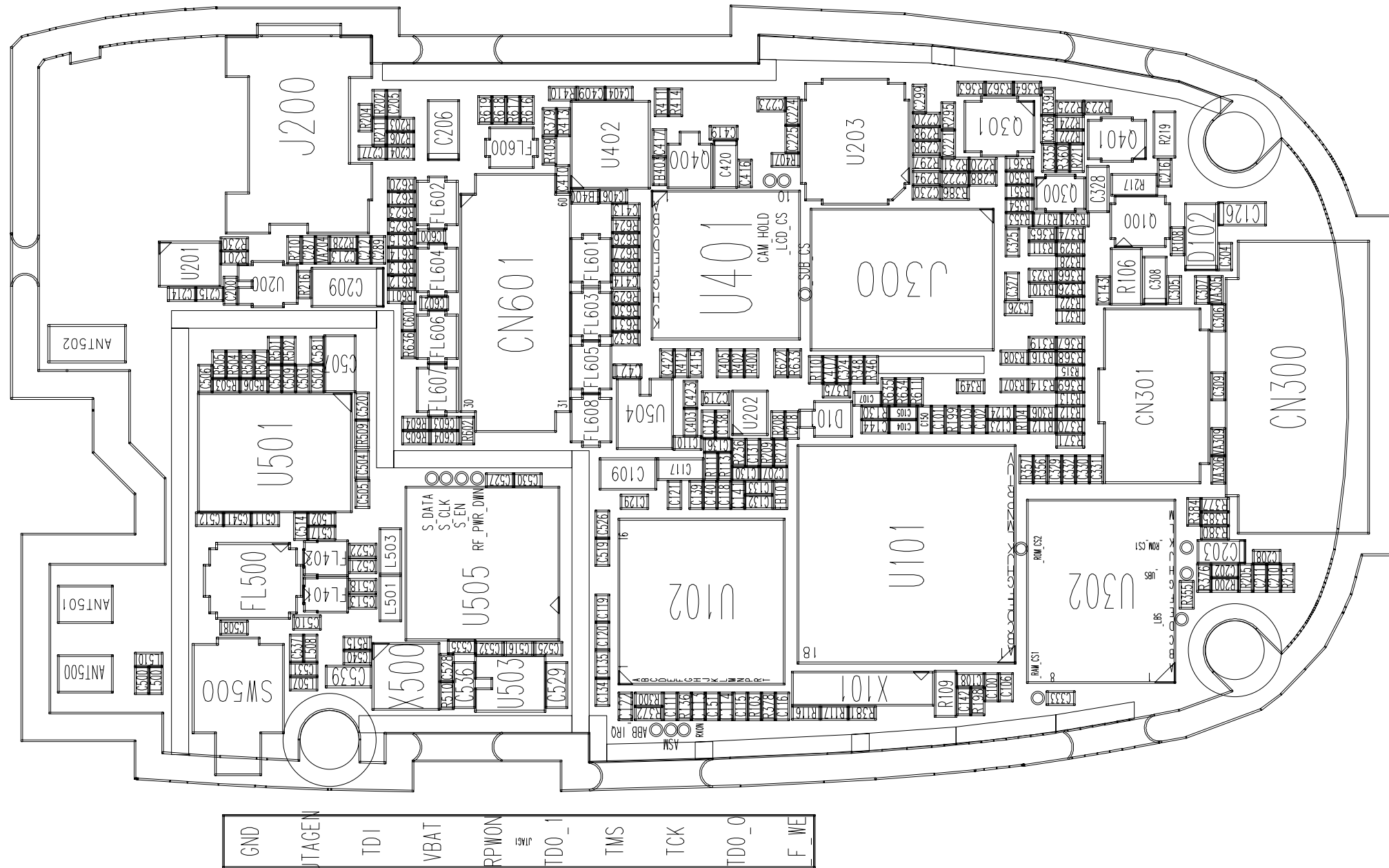
7. CIRCUIT DIAGRAM



8. PCB LAYOUT



8. PCB LAYOUT



9. ENGINEERING MODE

A. About Engineering Mode

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

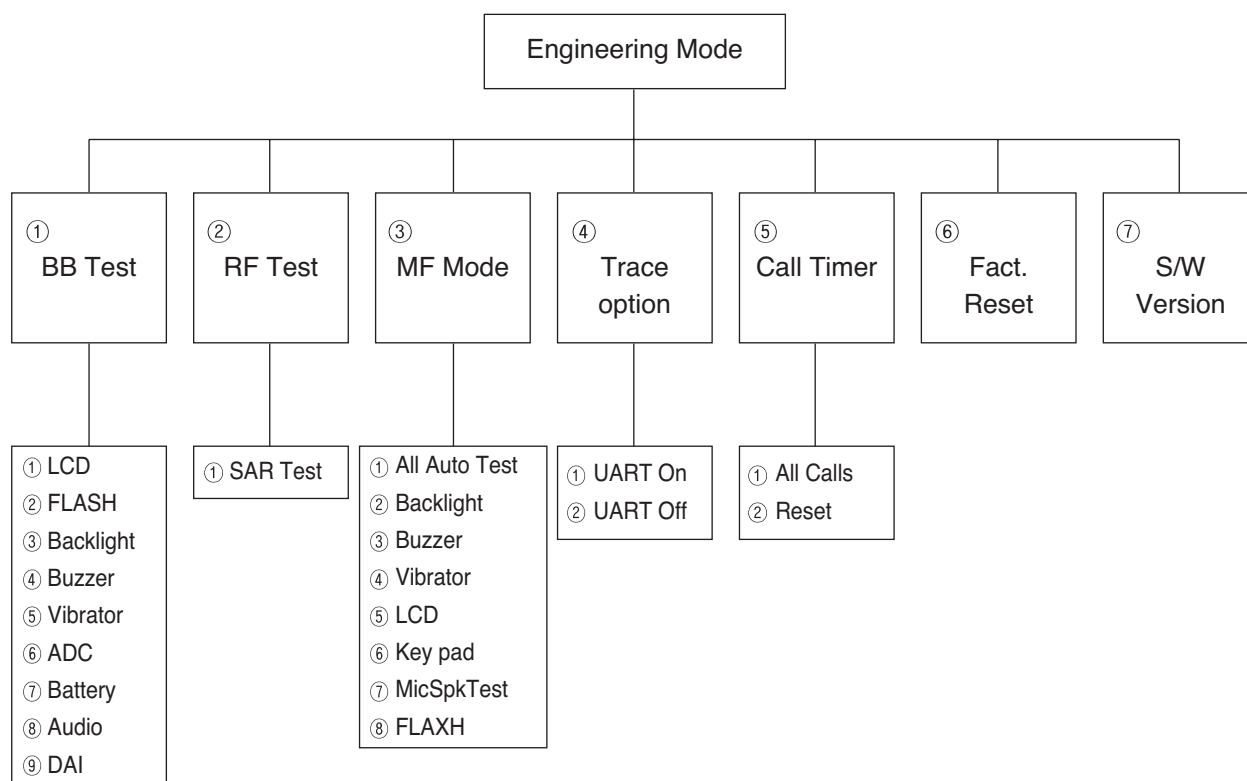
B. Access Codes

The key sequence for switching the engineering mode on is 2945##. Pressing END will switch back to non-engineering mode operation.

C. Key Operation

Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back' key will switch back to the original test menu.

D. Engineering Mode Menu Tree



9. ENGINEERING MODE

9.1 BB Test [MENU 1]

9.1.1 LCD

1) **Contrast value** : This menu is to Set Main LCD contrast value.

9.1.2 Flash

1) **Flash on** : This menu is to test Folder Flash light.

- Select this menu if you want to turn on folder flash light.

2) **Flash off** : This menu is to test Folder Flash light.

- Select this menu if you want to turn off folder flash light.

9.1.3 Backlight

This menu is to test the LCD Backlight and Keypad Backlight.

1) **Backlight on** : LCD Backlight and Keypad Backlight light on at the same time.

2) **Backlight off** : LCD Backlight and Keypad Backlight light off at the same time.

3) **Backlight value** : This controls brightness of Backlight. When entering into the menu, the present backlight-value in the phone is displayed. Use Left/Right key to adjust the level of brightness. The value of the brightness set at last will be saved in the NVRAM.

9.1.4 Buzzer

This menu is to test the melody sound.

1) **Melody on** : Melody sound is played through the speaker.

2) **Melody off** : Melody sound is off.

9.1.5 Vibrator

This menu is to test the vibration mode.

1) **Vibrator on** : Vibration mode is on.

2) **Vibrator off** : Vibration mode is off.

9.1.6 ADC (Analog to Digital Converter)

This displays the value of each ADC.

1) **MVBAT ADC** : Main Voltage Battery ADC

2) **AUX ADC** : Auxiliary ADC

3) **TEMPER ADC** : Temperature ADC

9.1.7 BATTERY

- 1) **Bat Cal** : This displays the value of Battery Calibration. The following menus are displayed in order :
BAT_LEV_4V, BAT_LEV_3_LIMIT, BAT_LEV_2_LIMIT, BAT_LEV_1_LIMIT, BAT_IDLE_LIMIT,
BAT_INCALL_LIMIT, SHUT_DOWN_VOLTAGE, BAT_RECHARGE_LMT
- 2) **TEMP Cal** : This displays the value of Temperature Calibration. The following menus are displayed in order : TEMP_HIGH_LIMIT, TEMP_HIGH_RECHARGE_LMT, TEMP_LOW_RECHARGE_LMT, TEMP_LOW_LIMIT

9.1.8 Audio

This is a menu for setting the control register of Voiceband Baseband Codec chip. Although the actual value can be written over, it returns to default value after switching off and on the phone.

- 1) **VbControl1** : VbControl1 bit Register Value Setting
- 2) **VbControl2** : VbControl2 bit Register Value Setting
- 3) **VbControl3** : VbControl3 bit Register Value Setting
- 4) **VbControl4** : VbControl4 bit Register Value Setting
- 5) **VbControl5** : VbControl5 bit Register Value Setting
- 6) **VbControl6** : VbControl6 bit Register Value Setting

9.1.9 DAI (Digital Audio Interface)

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- 1) **DAI AUDIO** : DAI audio mode
- 2) **DAI UPLINK** : Speech encoder test
- 3) **DAI DOWNLINK** : Speech decoder test
- 4) **DAI OFF** : DAI mode off

9.2 RF Test [MENU 2]

9.2.1 SAR test

This menu is to test the Specific Absorption Rate.

- 1) **SAR test on** : Phone continuously process TX only. Call-setup equipment is not required.
- 2) **SAR test off** : TX process off

9. ENGINEERING MODE

9.3 MF mode [MENU 3]

This manufacturing mode is designed to do the baseband test automatically. Selecting this menu will process the test automatically, and phone displays the previous menu after completing the test.

9.3.1 All auto test

LCD, Backlight, Vibrator, Buzzer, Key Pad, Mic&Speaker,

9.3.2 Backlight

LCD Backlight is on for about 1.5 seconds at the same time, then off.

9.3.3 Buzzer

This menu is to test the volume of Melody. It rings in the following sequence. Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

9.3.4 Vibrator

Vibrator is on for about 1.5 seconds.

9.3.5 LCD

1) LCD

Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

2) SubLCD

Sub LCD screen resolution tests horizontally and vertically one by one and fills the screen.

9.3.6 Key pad

When a pop-up message shows 'Press Any Key', you may press any keys including side keys, but not [Soft2 Key]. If the key is working properly, name of the key is displayed on the screen. Test will be completed in 15 seconds automatically.

9.3.7 MicSpk Test

The sound from MIC is recorded for about 3 seconds, then it is replayed on the speaker automatically.

9.3.8 Flash

Torch function is activated and deactivated.

9.4 Trace option [MENU 4]

This is NOT a necessary menu to be used by neither engineers nor users.

9.5 Call timer [MENU 5]

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

1) All calls : This displays total conversation time. User cannot reset this value.

2) Reset settings : This resets total conversation time to this, [00:00:00].

3) DAI DOWNLINK : Speech decoder test

4) DAI OFF : DAI mode off

9.6 Fact. Reset [MENU 6]

This Factory Reset menu is to format data block in the flash memory and this procedure set up the default value in data block.

Attention

- ① Fact. Reset (i.e.Factory Reset) should be only used during the Manufacturing process.
- ② Servicemen should NOT progress this menu, otherwise some of valuable data such as Setting value, RF Calibration data, etc. cannot be restored again.

9.7 S/W version

This displays software version stored in the phone.

10. STAND ALONE TEST

10. STAND ALONE TEST

10.1 Introduction

This manual explains how to examine the status of RX and TX of the model.

A. Tx Test

TX test - this is to see if the transmitter of the phones is activating normally.

B. Rx Test

RX test - this is to see if the receiver of the phones is activating normally.

10.2 Setting Method

A. COM port

- a. Move your mouse on the "Connect" button, then click the right button of the mouse and select "Com setting".
- b. In the "Dialog Menu", select the values as explained below.
 - Port : select a correct COM port
 - Baud rate : 38400
 - Leave the rest as default values

B. Tx

1. Selecting Channel

- Select one of GSM or DCS Band and input appropriate channel.

2. Selecting APC

- a. Select either Power level or Scaling Factor.
- b. Power level
 - Input appropriate value GSM (between 5~19) or DCS (between 0~15)
- c. Scaling Factor
 - A 'Ramp Factor' appears on the screen.
 - You may adjust the shape of the Ramp or directly input the values.

C. Rx

1. Selecting Channel

- Select one of GSM or DCS Band and input appropriate channel.

2. Gain Control Index (0~ 26) and RSSI level

- See if the value of RSSI is close to -16dBm when setting the value between 0 ~ 26 in Gain Control Index.
- Normal phone should indicate the value of RSSI close to -16dBm.

10.3 Means of Test

- Select a COM port
- Set the values in Tx or Rx
- Select band and channel
- After setting them all above, press connect button.
- Press the start button

Figure 10-1. HW test program

The screenshot displays the 'HW Test' application window. It is divided into several functional areas:

- Mode Selection:** At the top, there are two radio buttons: 'Tx' (selected) and 'Rx'.
- Band and Channel Selection:** Below the mode selection, there are two columns of options. Each column has a radio button for 'GSM' and 'DCS', followed by a text input field. In the 'Tx' column, 'GSM' is selected and the value is '62'. In the 'Rx' column, 'GSM' is also selected and the value is '62'.
- Power and Scaling Settings:** Under the 'Tx' section, there is an 'APC' button, a 'Power Level' radio button (selected) with a value of '10', and a 'Scaling Factor' radio button (unselected) with a value of '32767'.
- Gain and RSSI Settings:** Under the 'Rx' section, there is a 'Gain Control Index' text input field with the value '15', and an 'RSSI Level' text input field with the value '(dBm)'.
- COM Port Controls:** On the bottom left, under the 'COM' label, there are 'Connect' and 'Disconnect' buttons.
- Signal Flow Controls:** On the bottom right, under the 'Signal' label, there are 'Start' and 'Stop' buttons. Below these, under the 'Signal Flow' label, there are 'Send' and 'Receive' buttons, each followed by a text input field.

10. STAND ALONE TEST

Figure 10-2. HW test setting

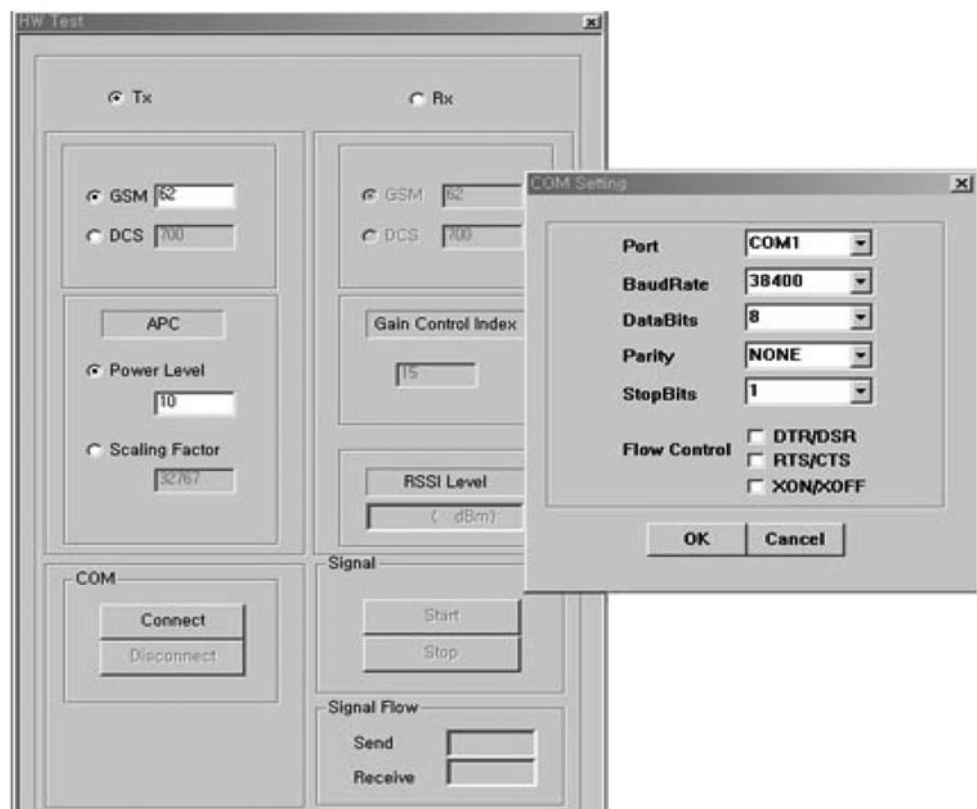
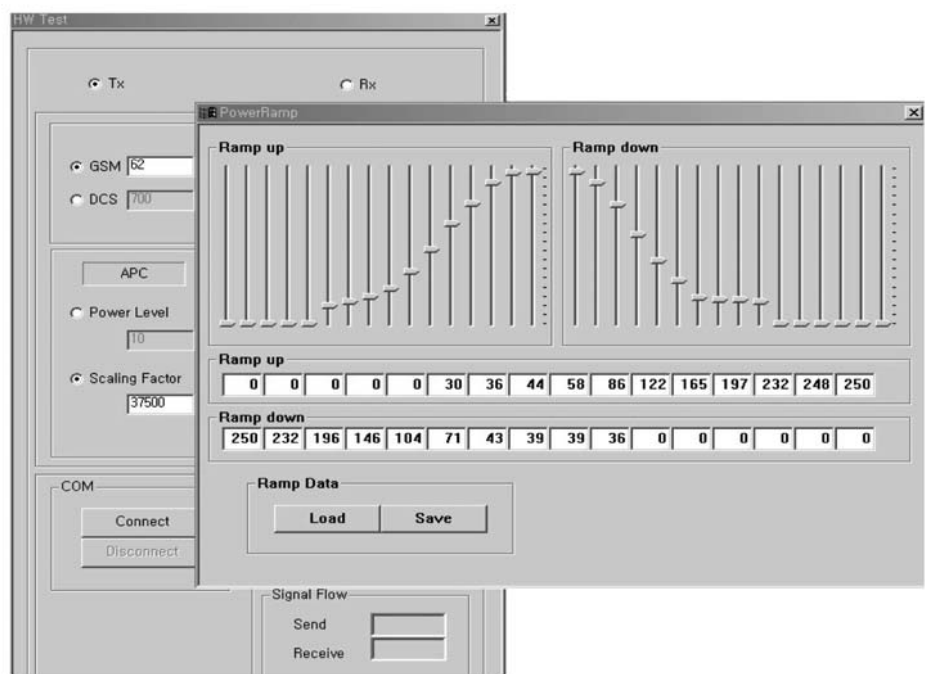


Figure 10-3. Ramping profile



11. AUTO CALIBRATION

11.1 Overview

Autocal (Auto Calibration) is the PC side Calibration tool that perform Tx ,Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable Power supply). Autocal generate calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

11.2 Requirements

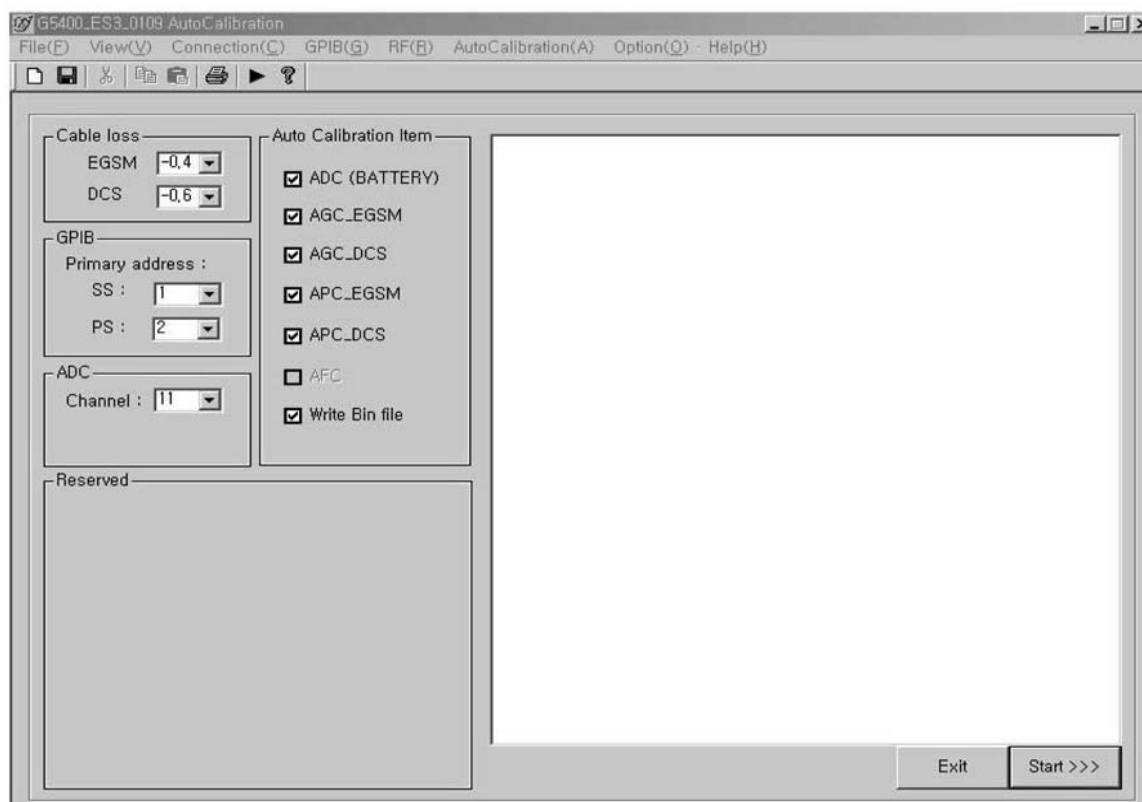
- PC or Notebook installed with Microsoft Windows 98/ME/2000/XP
- Auto Calibration program(Autocal.exe)
- GSM Phone
- LGE PIF JIG, Serial Cable, Data Cable
- Agilent 8960(Call Setting Instrument)
- Tektronix PS2521G(Programmable Power Supply)

11.3 Menu and Settings

- File(F) Clear View : Clear Calibration Status window texts
- File(F) Save View : Save Calibration Status window texts
- File(F) Save Setting : Save Current Calibration settings to setting file(*.cal)
- File(F) Load Setting : Load saved Calibration setting
- File(F) Make BIN ALL : Make binary file after calibration finished
- File(F) Make BIN BAT.Cal only : Make binary file of battery cal data only after calibration finished
- File(F) Make & Write BIN : Make binary file after calibration finished then download it to the Flash Memory
- View(V) Tools : Enable or disable Tool bar
- View(V) Status : Enable or disable status bar
- Connection(C) Connect : Connect the phone with PC. This procedure checks whether the PC is connected "ag8960 " or not. After that it performs sync. procedure with phone. If the sync. procedure is successful state column on status bar changed to SETUP, else you should disconnect phone and try again from the beginning and also check the whole connection. All measurement is performed at state SETUP.
- Connection(C) Port Setting : Show COM port setting dialog and Baudrate you can change,etc.
- GPIB(G) Connect : Connect the Ag8960 GPIB card with PC.

11. AUTO CALIBRATION

Figure 11-1. Auto Calibration Program



Screen → Cable loss : Enter the RF cable loss GSM and DCS

Screen → GPIB(Primary address) : Enter the SS(Ag8960) and PS(Tektronix PS2521G) GPIB address

Screen → ADC Channel : Default ADC Calibration Channel

Screen → Auto Calibration Item : Default Calibration Settings about Tx, Rx, ADC and write BIN file

11.4 AGC

This procedure is for Rx calibration.

In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

11.5 APC

This procedure is for Tx calibration.

In this procedure you can get proper scale factor value and measured power level.

11.6 ADC

This procedure is for battery calibration.

You can get main Battery Config Table and temperature Config Table

11.7 Setting

check com port and cable loss. Select automatic calibration item. If you uncheck one item calibration will stop from the unchecked item. This is useful when you want to process only one item.

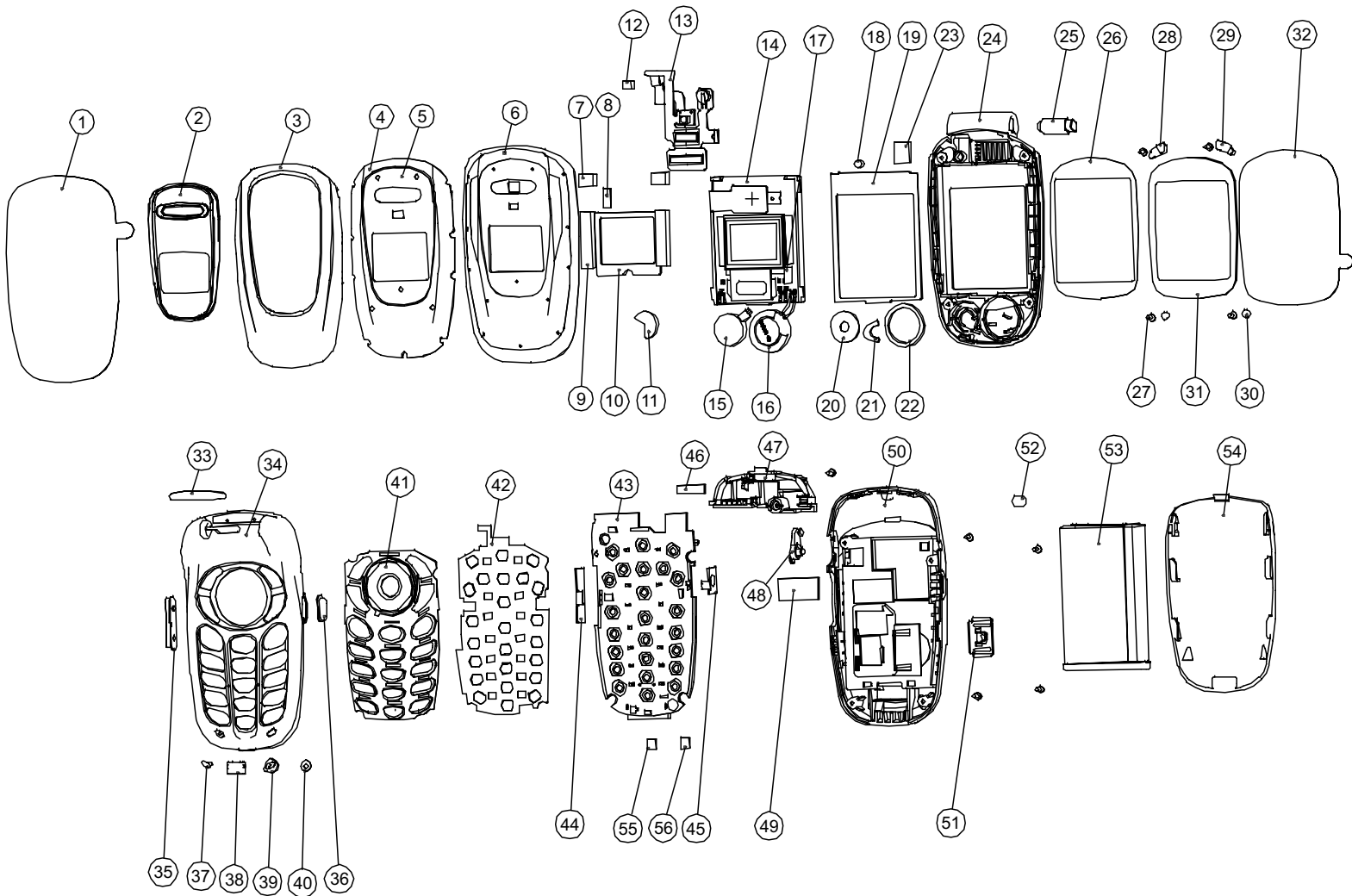
11.8 How to do calibration

- A. Connect cable between phone and serial port of PC.
- B. Connect Ag8960 equipment and Power Supply and phone.
- C. Set correct port and baud rate.
- D. Press Start button. AutoCal process all calibration procedure
 - i. AGC EGSM
 - ii. AGC DCS
 - iii. APC EGSM
 - iv. APC DCS
 - v. ADC
- E. After finished all measurement. The state is return to SETUP.
- F. The Cal file will be generated and then the calibration data will be written into phone and then will be reset.

Note

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.1 EXPLODED VIEW



| | | | |
|-----|-------------------------------|------|--------------|
| 56 | PAD(C-MIC(LR)) | | MPBZ0051501 |
| 55 | PAD(C-MIC(L)) | | MPBZ0051502 |
| 54 | COVER, BATTERY | | MCJA0011701 |
| 53 | BATTERY, INNER-PACK | | SBP10076308 |
| 52 | CAP. NOBLE SWITCH | | MCCT0021301 |
| 51 | COVER, GUIDE | | NLEF0000101 |
| 50 | COVER, REAR | | MCJN0027301 |
| 49 | GASKET, SHIELD FOAM(REAR) | | MGAD0065501 |
| 48 | CAP. EAR-JACK | | MCCL0018601 |
| 47 | ANTENNA | | SNST0006301 |
| 46 | GASKET, SHIELD FOAM | | MGAD0017701 |
| 45 | PCB, FLASH KEY | | ADCA0029501 |
| 44 | PCB, SIDE KEY(VOLUME) | | ADCA0029401 |
| 43 | PCB, ASSY, MAIN | | - |
| 42 | DOVE ASSY, METAL | | ADCA0023701 |
| 41 | KEYPAD | | NKAZ0017802 |
| 40 | FILTER, MINE | | NFR00006301 |
| 39 | BUMPER(R) | | NBHY0011201 |
| 38 | INDICATOR, LED | | NIAA0012801 |
| 37 | BUMPER(L) | | NBHY0010601 |
| 36 | BUTTON, FLASH | | NBJC0014301 |
| 35 | BUTTON, VOLUME | | NBJD0003801 |
| 34 | COVER, FRONT | | MCJK0030601 |
| 33 | STOPPER | | NSGT0008001 |
| 32 | TAPE, PROTECTION(MAIN WINDOW) | | NTAB0051901 |
| 31 | WINDOW, LCD(MAIN) | | NMAC0042702 |
| 30 | CAP. SCREW(UP) | 2 | MCCH0033301 |
| 29 | CAP. SCREW(R) | | MCCH0033501 |
| 28 | CAP. SCREW(L) | | MCCH0033401 |
| 27 | SCREW, MACHINE | 4 | GNZ0015101 |
| 26 | TAPE, WINDOW(MAIN) | | NTAD0026901 |
| 25 | HINGE, FOLDER | | NHFD0003701 |
| 24 | COVER, FOLDER, LOWER | | MCJH0020501 |
| 23 | PAD, CONN(DOWN) | | MPBZ00086301 |
| 22 | FILTER(SPEAKER) | | NFR00010501 |
| 21 | FILTER(MOTOR) | | NFR00001301 |
| 20 | PAD, MOTOR(UP) | | MPBJ0014401 |
| 19 | PAD, LCD(MAIN) | | MPB00025001 |
| 18 | MAGNET, SWITCH | | NMAA0001601 |
| 17 | INSULATOR | | NTAB0008901 |
| 16 | SPEAKER | | SUST0014101 |
| 15 | MOTOR | | SJMY0002602 |
| 14 | LCD | | SVLY0024701 |
| 13 | PCB, ASSY, FLEXIBLE | | SNCT0030501 |
| 12 | GASKET, SHIELD FOAM | | MGAD00084001 |
| 11 | PAD, MOTOR | | MPBJ0018001 |
| 10 | PAD, LCD(SUB) | | MPB00017301 |
| 9 | GASKET, SHIELD FOAM | 2 | MGAD0063801 |
| 8 | PAD, FPCB | | MPBZ00073901 |
| 7 | PAD, UPPER(UP) | 2 | MPBZ00084101 |
| 6 | COVER, FOLDER, UPPER | | MCJJ0032001 |
| 5 | TAPE, WINDOW(SUB) | | NIAE0021501 |
| 4 | TAPE, DECO(FOLDER) | | NIAA00273401 |
| 3 | DECO, FOLDER | | NDAE00028001 |
| 2 | WINDOW, LCD(SUB) | | NWAB0015001 |
| 1 | TAPE, PROTECTION(PHONE) | | NTAB0059702 |
| NO. | DESCRIPTION | Q'TY | PART NO. |

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|---------------------------|-------------|--------------------------------|------------|--------|
| 1 | | GSM(FOLDER) | TGFF0061401 | C2100 INDTG (INDIA) | Titan Gray | |
| 2 | AAAY00 | ADDITION | AAAY0082002 | | Titan Gray | |
| 3 | MCJA00 | COVER,BATTERY | MCJA0011701 | GE200 EUASV | Silver | 54 |
| 2 | APEY00 | PHONE | APEY0199601 | C2100 INDTG (INDIA) | Titan Gray | |
| 3 | ACGG00 | COVER ASSY,FOLDER | ACGG0056301 | C2100 RUSSV | Titan Gray | |
| 4 | ACGH00 | COVER ASSY, FOLDER(LOWER) | ACGH0031201 | C2100 RUSSV | Gray | |
| 5 | MCJH00 | COVER,FOLDER(LOWER) | MCJH0020501 | GE200 EUASV | Gray | 24 |
| 5 | MFBC00 | FILTER,SPEAKER | MFBC0010501 | GE200 EUASV | Black | 22 |
| 5 | MBZ00 | FILTER | MBZ0001301 | GE200 FILTER,MOTOR | Black | 21 |
| 5 | MMAA00 | MAGNET,SWITCH | MMAA0001601 | 7100 magnetic | Silver | 18 |
| 5 | MPBG00 | PAD,LCD | MPBG0025001 | GE200 MAIN LCD PAD | Black | 19 |
| 5 | MPBJ00 | PAD,MOTOR | MPBJ0014401 | 11.7/4.5 dia. double side tape | Silver | 20 |
| 5 | MPBZ00 | PAD | MPBZ0086301 | C2100 PAD,CONN DOWN (LOWER) | Black | 23 |
| 5 | MTAD00 | TAPE,WINDOW | MTAD0026901 | GE200 MAIN WINDOW TAPE | White | 26 |
| 4 | ACGJ00 | COVER ASSY, FOLDER(UPPER) | ACGJ0044701 | C2100 RUSTG (SHINHAN) | Gray | |
| 5 | MCJJ00 | COVER,FOLDER(UPPER) | MCJJ0032001 | C2100 RUSSV | Gray | 6 |
| 5 | MDAE00 | DECO,FOLDER(UPPER) | MDAE0028001 | C2100 DECO,FOLDER | Silver | |
| 5 | MGAD00 | GASKET,SHIELD FORM | MGAD0063801 | GE200 GASKET,SHIELD FOAM(LCD) | Silver | 9 |
| 5 | MICA00 | INSERT,FRONT | MICA0012901 | GE200 EUASV | Gold | |
| 5 | MPBJ00 | PAD,MOTOR | MPBJ0018001 | GE200 PAD,MOTOR(UPPER) | Black | 11 |
| 5 | MPBQ00 | PAD,LCD(SUB) | MPBQ0017301 | GE200 | Black | 10 |
| 5 | MPBZ00 | PAD | MPBZ0073901 | GE200 PAD,FPCB(UPPER) | Black | 8 |
| 5 | MPBZ01 | PAD | MPBZ0084101 | C2100 PAD,UPPER (UP) | Black | 7 |
| 5 | MTAA00 | TAPE,DECO | MTAA0073401 | C2100 RUSSV | White | 4 |
| 5 | MTAE00 | TAPE,WINDOW(SUB) | MTAE0021501 | C2100 RUSSV | Black | 5 |
| 4 | ACGK00 | COVER ASSY,FRONT | ACGK0049401 | C2100 RUSSV | Gray | |
| 5 | MBHY00 | BUMPER | MBHY0010601 | GE200_BUMPER_L | Gray | 37 |
| 5 | MBHY01 | BUMPER | MBHY0011201 | GE200_BUMPER_R | Gray | 39 |
| 5 | MBJC00 | BUTTON,FUNCTION | MBJC0014301 | C2100 RUSSV (FLASH BTN) | Silver | 36 |
| 5 | MBJN00 | BUTTON,VOLUME | MBJN0003801 | GE200 VOLUME BUTTON | Silver | 35 |
| 5 | MCJK00 | COVER,FRONT | MCJK0030601 | GE200 EUASV | Gray | 34 |
| 5 | MFBD00 | FILTER,MIKE | MFBD0006301 | GE200 FILTER,MIKE (FRONT) | Black | 40 |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|--------------------|-------------|--|-------------|--------|
| 5 | MIAA00 | INDICATOR,LED | MIAA0012801 | GE200 INDICATOR,LED | White | 38 |
| 5 | MSGY00 | STOPPER | MSGY0008001 | GE200 STOPPER | Gray | 33 |
| 4 | AWAB00 | WINDOW ASSY,LCD | AWAB0015001 | C2100 SUB WINDOW (INMOLD) for RUSSIA | Silver | 2 |
| 5 | BFAA00 | FILM,INMOLD | BFAA0027401 | C2100 Window Inmold Film | Silver | |
| 5 | MWAF00 | WINDOW,LCD(SUB) | MWAF0025701 | C2100 Sub_window | | |
| 4 | GMZZ00 | SCREW MACHINE | GMZZ0015101 | 1.4 mm,3.0 mm,MSWR3(FN) ,N ,+ , - , | Silver | 27 |
| 4 | MCCH00 | CAP,SCREW | MCCH0033301 | GE200_CAP,SCREW (UP) | Gray | 30 |
| 4 | MCCH01 | CAP,SCREW | MCCH0033401 | GE200 CAP,SCREW_L | Gray | 28 |
| 4 | MCCH02 | CAP,SCREW | MCCH0033501 | GE200 CAP,SCREW_R | Gray | 29 |
| 4 | MGAD00 | GASKET,SHIELD FORM | MGAD0084001 | C2100 SHIELD FOAM (FOR FPCB) | Gold | 12 |
| 4 | MHFD00 | HINGE,FOLDER | MHFD0003701 | PI5.8 5Kgf CAN TYPE/ KATO SPRING(HEAD R1.0) | | 25 |
| 4 | MIDZ00 | INSULATOR | MIDZ0051201 | | Green | |
| 4 | MLAC00 | LABEL,BARCODE | MLAC0003401 | EZ LOOKS(user for mechanical) | | |
| 4 | MTAB00 | TAPE,PROTECTION | MTAB0051901 | GE200 TAPE,PROTECTION(MAIN WINDOW) | | 32 |
| 4 | MTAB01 | TAPE,PROTECTION | MTAB0059702 | C2100 TAPE,PROTECTION (PHONE) | | 1 |
| 4 | MTAB02 | TAPE,PROTECTION | MTAB0068901 | C2100 TAPE,FILM (for LCD MODULE) | Blue | 17 |
| 4 | MWAC00 | WINDOW,LCD | MWAC0042702 | C2100 RUSSV | Silver | 31 |
| 3 | ACGM00 | COVER ASSY,REAR | ACGM0040401 | GE200 EUASV | Gray | |
| 4 | MCCC00 | CAP,EARPHONE JACK | MCCC0018601 | GE200 EUASV | Gray | 48 |
| 4 | MCJN00 | COVER,REAR | MCJN0027301 | GE200 EUASV | Gray | 50 |
| 4 | MGAD00 | GASKET,SHIELD FORM | MGAD0065501 | GE200(REAR) | Gold | 49 |
| 4 | MLEE00 | LOCKER,CARD READER | MLEE0000101 | | | 51 |
| 3 | GMZZ00 | SCREW MACHINE | GMZZ0015101 | 1.4 mm,3.0 mm,MSWR3(FN) ,N ,+ , - , | Silver | |
| 3 | MCCF00 | CAP,MOBILE SWITCH | MCCF0021301 | GE200 | Gray | 52 |
| 3 | MKAZ00 | KEYPAD | MKAZ0017804 | C2100 FOR INDIA & M ASIA ENGLISH CHARACTER(BASE MODEL : C3310) | Gray | 41 |
| 3 | MLAK00 | LABEL,MODEL | MLAK0006301 | LG (30.5x21.5 4-1R) | Pearl White | |
| 5 | ADCA00 | DOME ASSY,METAL | ADCA0023701 | GE200 EUASV | Silver | 42 |
| 5 | ADCA01 | DOME ASSY,METAL | ADCA0029401 | GE200 DOME ASSY, VOLUME | Silver | 44 |
| 5 | ADCA02 | DOME ASSY,METAL | ADCA0029501 | GE200 DOME ASSY, FUNCTION(CAMERA) | Silver | 45 |
| 5 | MGAD00 | GASKET,SHIELD FORM | MGAD0077701 | GE200 SHIELD,FOAM(ANTENNA) | Gold | 46 |
| 5 | MPBZ00 | PAD | MPBZ0051501 | 4*3.5*0.5T | Black | 56 |
| 5 | MPBZ01 | PAD | MPBZ0051502 | C2100 PAD,C-MIC | Black | 55 |
| 5 | MLAB00 | LABEL,A/S | MLAB0000601 | HUMIDITY STICKER | | |
| 5 | MLAC00 | LABEL,BARCODE | MLAC0003301 | EZ LOOKS(use for PCB ASSY MAIN(hardware)) | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|---------------------------------|-------------|--|-------|--------|
| 4 | SACY00 | PCB ASSY,FLEXIBLE | SACY0030601 | | | 13 |
| 5 | SACB00 | PCB ASSY, FLEXIBLE,INSERT | SACB0018701 | | | |
| 5 | SACE00 | PCB ASSY,FLEXIBLE,SMT | SACE0023803 | | | |
| 6 | SACC00 | PCB ASSY,FLEXIBLE,SMT BOTTOM | SACC0013401 | | | |
| 7 | ENBY00 | CONNECTOR, BOARD TO BOARD | ENBY0013007 | 60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 1.5 / HEADER FOR LCM FPCB | | |
| 6 | SACD00 | PCB ASSY,FLEXIBLE,SMT TOP | SACD0020101 | | | |
| 7 | EDLM00 | DIODE,LED,MODULE | EDLM0005501 | R,G,B ,3 LED,3.5*2.8*1.8 ,R/TP ,Flash LED | | |
| 7 | ENBY00 | CONNECTOR, BOARD TO BOARD | ENBY0020301 | 40 PIN,0.4 mm,ETC , ,H=0.9, Socket | | |
| 6 | SPCY00 | PCB,FLEXIBLE | SPCY0051701 | POLYI ,0.5 mm,MULTI-4 ,C2100 FPCB | | |
| 4 | SBCL00 | BATTERY,CELL,LITHIUM | SBCL0001303 | 2 V,1 mAh,COIN ,SOLDER TYPE BACKUP BATTERY | | |
| 4 | SJMY00 | VIBRATOR,MOTOR | SJMY0002602 | 3.0 V,80 mA,12*3.4 , | | 15 |
| 4 | SUSY00 | SPEAKER | SUSY0014101 | ASSY ,8 ohm,92 dB,16 mm,4.0T, 0.7W | | 16 |
| 4 | SVLY00 | LCD | SVLY0024701 | MAIN ,128*160 (1.8 inch)+96*64 (MONO) ,35.8*47*4.8(t) ,65k ,CSTN ,TM ,HD66766UR / S-44001A ,Renesas,Matsushita,16Bit | | 14 |
| 3 | SAFY00 | PCB ASSY,MAIN | SAFY0116004 | | | |
| 4 | SAFB00 | PCB ASSY,MAIN,INSERT | SAFB0044201 | | | |
| 4 | SAFF00 | PCB ASSY,MAIN,SMT | SAFF0050804 | | | |
| 5 | SAFC00 | PCB ASSY,MAIN,SMT BOTTOM | SAFC0050001 | | | |
| 6 | C100 | CAP,CERAMIC,CHIP | ECCH0000163 | 47 nF,10V,K,X5R,HD,1005,R/TP | | |
| 6 | C101 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C102 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C103 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C104 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C105 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C106 | CAP,CERAMIC,CHIP | ECCH0000163 | 47 nF,10V,K,X5R,HD,1005,R/TP | | |
| 6 | C107 | CAP,CERAMIC,CHIP | ECCH0000163 | 47 nF,10V,K,X5R,HD,1005,R/TP | | |
| 6 | C108 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C109 | CAP,CERAMIC,CHIP | ECCH0000393 | 22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP | | |
| 6 | C110 | CAP,CERAMIC,CHIP | ECCH0000115 | 22 pF,50V ,J,NP0,TC,1005,R/TP | | |
| 6 | C111 | CAP,CERAMIC,CHIP | ECCH0000163 | 47 nF,10V,K,X5R,HD,1005,R/TP | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|-----------------------|-------------|-------------------------------------|-------|--------|
| 6 | C113 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C114 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C115 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C116 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C117 | CAP,CERAMIC,CHIP | ECCH0005801 | 2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C118 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C119 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C120 | CAP,CERAMIC,CHIP | ECCH0000165 | 68 nF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C121 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C122 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C123 | CAP,CERAMIC,CHIP | ECCH0000163 | 47 nF,10V,K,X5R,HD,1005,R/TP | | |
| 6 | C124 | CAP,CERAMIC,CHIP | ECCH0000163 | 47 nF,10V,K,X5R,HD,1005,R/TP | | |
| 6 | C126 | CAP,CERAMIC,CHIP | ECCH0006201 | 4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C129 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C130 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C131 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C132 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C133 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C134 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C135 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C136 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C137 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C138 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C139 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C140 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C141 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C143 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C144 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C150 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C151 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C200 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C202 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C203 | CAP,TANTAL,CHIP,MAKER | ECTZ0005201 | 10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP | | |
| 6 | C206 | CAP,TANTAL,CHIP,MAKER | ECTZ0003602 | 22 uF,6.3V ,M ,STD ,2012 ,R/TP | | |
| 6 | C207 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C208 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C209 | CAP,TANTAL,CHIP,MAKER | ECTZ0003101 | 33 uF,10V ,M ,STD ,ETC ,R/TP | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|-----------------------|-------------|-------------------------------------|-------|--------|
| 6 | C210 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C211 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C212 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C214 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C215 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C216 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C218 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C219 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C220 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C221 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C222 | CAP,CERAMIC,CHIP | ECCH0000138 | 390 pF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C223 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C224 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C225 | CAP,CERAMIC,CHIP | ECCH0000122 | 47 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C230 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C277 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C287 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C288 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C289 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C298 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C299 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C304 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C305 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C306 | CAP,CERAMIC,CHIP | ECCH0000104 | 3 pF,50V,C,NP0,TC,1005,R/TP | | |
| 6 | C307 | CAP,CERAMIC,CHIP | ECCH0000110 | 10 pF,50V,D,NP0,TC,1005,R/TP | | |
| 6 | C308 | CAP,TANTAL,CHIP,MAKER | ECTZ0005201 | 10 uF,6.3V ,M ,L _ESR ,1608 ,R/TP | | |
| 6 | C309 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C325 | CAP,CERAMIC,CHIP | ECCH0004902 | 220 nF,10V ,Z ,Y5V ,TC ,1005 ,R/TP | | |
| 6 | C326 | CAP,CERAMIC,CHIP | ECCH0000115 | 22 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C327 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C328 | CAP,CERAMIC,CHIP | ECCH0006201 | 4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C329 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C330 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C331 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C332 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C333 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C335 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|------------------|--------------|-------------------------------------|-------|--------|
| 6 | C336 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C404 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C406 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C409 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C410 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C413 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C417 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C421 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C422 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C423 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C500 | CAP,CERAMIC,CHIP | ECCH0000701 | 1.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C501 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C502 | CAP,CERAMIC,CHIP | ECCH0000186 | 33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C503 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C504 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C505 | CAP,CERAMIC,CHIP | ECCH0000113 | 18 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C506 | CAP,CERAMIC,CHIP | ECCH0000155 | 10 nF,16V,K,X7R,HD,1005,R/TP | | |
| 6 | C507 | CAP,CERAMIC,CHIP | ECCH0000393 | 22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP | | |
| 6 | C508 | CAP,CERAMIC,CHIP | ECCH0000115 | 22 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C509 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C510 | CAP,CERAMIC,CHIP | ECCH0000117 | 27 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C512 | CAP,CERAMIC,CHIP | ECCH0000101 | .5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C513 | CAP,CERAMIC,CHIP | ECCH0000102 | 1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C514 | CAP,CERAMIC,CHIP | ECCH0000115 | 22 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C516 | CAP,CERAMIC,CHIP | ECCH0000143 | 1 nF,50V,K,X7R,HD,1005,R/TP | | |
| 6 | C518 | CAP,CERAMIC,CHIP | ECCH0000102 | 1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C519 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C520 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C521 | CAP,CERAMIC,CHIP | ECCH0000102 | 1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C522 | CAP,CERAMIC,CHIP | ECCH0000102 | 1 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C525 | CAP,CERAMIC,CHIP | ECCH0000179 | 22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP | | |
| 6 | C526 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C527 | CAP,CERAMIC,CHIP | ECCH0000179 | 22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP | | |
| 6 | C528 | CAP,CERAMIC,CHIP | ECCH0000128 | 100 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C529 | CAP,CERAMIC,CHIP | ECCH00006201 | 4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C530 | CAP,CERAMIC,CHIP | ECCH0000115 | 22 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C531 | CAP,CERAMIC,CHIP | ECCH0000110 | 10 pF,50V,D,NP0,TC,1005,R/TP | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|---------------------------|--------------|---|-------|--------|
| 6 | C532 | CAP,CERAMIC,CHIP | ECCH0000128 | 100 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C535 | CAP,CERAMIC,CHIP | ECCH0000179 | 22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP | | |
| 6 | C536 | CAP,CERAMIC,CHIP | ECCH00006201 | 4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C537 | CAP,CERAMIC,CHIP | ECCH0000171 | 3.3 pF,16V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C539 | CAP,CERAMIC,CHIP | ECCH00005801 | 2.2 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP | | |
| 6 | C540 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C541 | CAP,CERAMIC,CHIP | ECCH0000186 | 33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP | | |
| 6 | C581 | CAP,CERAMIC,CHIP | ECCH0000111 | 12 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C601 | CAP,CERAMIC,CHIP | ECCH0000115 | 22 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C602 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C603 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | C604 | CAP,CERAMIC,CHIP | ECCH0000120 | 39 pF,50V,J,NP0,TC,1005,R/TP | | |
| 6 | CN300 | CONNECTOR,I/O | ENRY0000801 | 24 PIN,0.5 mm,ETC ,Au ,BAT ZERO | | |
| 6 | CN301 | CONNECTOR,ETC | ENZY0016201 | 3 PIN,3.0 mm,ETC , ,H=7.5 | | |
| 6 | CN601 | CONNECTOR, BOARD TO BOARD | ENBY0013008 | 60 PIN,0.4 mm,STRAIGHT ,AU ,STACKING HEIGHT 1.5 / SOCKET FOR LCM FPCB | | |
| 6 | D101 | DIODE,SWITCHING | EDSY0005701 | EMT3 ,80 V,4 A,R/TP , | | |
| 6 | D102 | DIODE,SWITCHING | EDSY0012101 | US-FLAT ,30 V,1 A,R/TP ,2.5*1.25*0.6(t) | | |
| 6 | FB101 | FILTER,BEAD,CHIP | SFBH0007102 | 10 ohm,1005 ,Ferrite Bead | | |
| 6 | FB400 | FILTER,BEAD,CHIP | SFBH0007102 | 10 ohm,1005 ,Ferrite Bead | | |
| 6 | FB403 | FILTER,BEAD,CHIP | SFBH0007102 | 10 ohm,1005 ,Ferrite Bead | | |
| 6 | FL401 | FILTER,SAW | SFSY0021301 | 942.5 MHz,2.0*1.4*0.68 ,SMD , | | |
| 6 | FL402 | FILTER,SAW | SFSY0021302 | 1842.5 MHz,2.0*1.4*0.68 ,SMD , | | |
| 6 | FL500 | FILTER,SEPERATOR | SFAY0003702 | 900 ,1800 ,1.3 dB,1.5 dB,30 dB,25 dB,4532 ,Antenna switch | | |
| 6 | FL600 | FILTER,EMI/POWER | SFEY0007102 | SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF) | | |
| 6 | FL601 | FILTER,EMI/POWER | SFEY0007102 | SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF) | | |
| 6 | FL602 | FILTER,EMI/POWER | SFEY0007102 | SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF) | | |
| 6 | FL603 | FILTER,EMI/POWER | SFEY0007102 | SMD ,5.6 V,SMD ,4ch. R-Varistor Array(400Ohm,25pF) | | |
| 6 | FL604 | FILTER,EMI/POWER | SFEY0007103 | SMD ,18 V , ,SMD ,4ch. R-Varistor Array(50Ohm,15pF) | | |
| 6 | J200 | CONN,JACK/PLUG, EARPHONE | ENJE0002301 | 3,5 PIN,G7000 EAR JACK 3 pole, 5 pin KSD | | |
| 6 | J300 | CONN,SOCKET | ENSY0001608 | 6 PIN,ETC ,5D ,2.54 mm,1.8T | | |
| 6 | L500 | INDUCTOR,CHIP | ELCH0004711 | 22 nH,J ,1005 ,R/TP , | | |
| 6 | L501 | INDUCTOR,CHIP | ELCH0002715 | 27 nH,G ,1608 ,R/TP ,coil inductor | | |
| 6 | L503 | INDUCTOR,CHIP | ELCH0002717 | 6.8 nH,J ,1608 ,R/TP ,coil inductor | | |
| 6 | L507 | INDUCTOR,CHIP | ELCH0005006 | 33 nH,J ,1005 ,R/TP , | | |
| 6 | L508 | INDUCTOR,CHIP | ELCH0005006 | 33 nH,J ,1005 ,R/TP , | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|------------------|-------------|--|-------|--------|
| 6 | L510 | INDUCTOR,CHIP | ELCH0004709 | 3.3 nH,S ,1005 ,R/TP , | | |
| 6 | Q100 | TR,FET,P-CHANNEL | EQFP0004201 | 2.9*1.9*0.8(t) ,0.7 W,20 V,-6.0 A,R/TP ,NDC652P upgrade(substitution) item | | |
| 6 | Q300 | TR,BJT,ARRAY | EQBA0002701 | EMT6 ,150 mW,R/TP ,NPN, PNP, 150 mA | | |
| 6 | Q301 | TR,BJT,NPN | EQBN0004801 | SMT6 ,0.2 W,R/TP , | | |
| 6 | Q401 | TR,BJT,ARRAY | EQBA0000406 | SC-70 ,0.2 W,R/TP ,CDMA,Common use | | |
| 6 | R103 | RES,CHIP | ERHY0000261 | 10K ohm,1/16W,J,1005,R/TP | | |
| 6 | R104 | RES,CHIP | ERHY0000225 | 200 ohm,1/16W,J,1005,R/TP | | |
| 6 | R106 | RES,CHIP | ERHY0001102 | 0.2 ohm,1/4W ,F ,2012 ,R/TP | | |
| 6 | R108 | RES,CHIP | ERHY0000230 | 330 ohm,1/16W,J,1005,R/TP | | |
| 6 | R109 | RES,CHIP | ERHY0000512 | 10M ohm,1/16W,J,1608,R/TP | | |
| 6 | R110 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R111 | RES,CHIP | ERHY0000202 | 4.7 ohm,1/16W,J,1005,R/TP | | |
| 6 | R112 | RES,CHIP | ERHY0000152 | 82K ohm,1/16W,F,1005,R/TP | | |
| 6 | R113 | RES,CHIP | ERHY0000202 | 4.7 ohm,1/16W,J,1005,R/TP | | |
| 6 | R116 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R117 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R130 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R200 | RES,CHIP | ERHY0000241 | 1K ohm,1/16W,J,1005,R/TP | | |
| 6 | R201 | RES,CHIP | ERHY0000296 | 1M ohm,1/16W,J,1005,R/TP | | |
| 6 | R202 | RES,CHIP | ERHY0000241 | 1K ohm,1/16W,J,1005,R/TP | | |
| 6 | R203 | RES,CHIP | ERHY0000265 | 20K ohm,1/16W,J,1005,R/TP | | |
| 6 | R204 | RES,CHIP | ERHY0000244 | 1.5K ohm,1/16W,J,1005,R/TP | | |
| 6 | R205 | RES,CHIP | ERHY0000247 | 2.2K ohm,1/16W,J,1005,R/TP | | |
| 6 | R206 | RES,CHIP | ERHY0000265 | 20K ohm,1/16W,J,1005,R/TP | | |
| 6 | R208 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R209 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R210 | RES,CHIP | ERHY0000202 | 4.7 ohm,1/16W,J,1005,R/TP | | |
| 6 | R211 | RES,CHIP | ERHY0000262 | 12K ohm,1/16W,J,1005,R/TP | | |
| 6 | R212 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R215 | RES,CHIP | ERHY0000247 | 2.2K ohm,1/16W,J,1005,R/TP | | |
| 6 | R216 | RES,CHIP | ERHY0000296 | 1M ohm,1/16W,J,1005,R/TP | | |
| 6 | R217 | RES,CHIP,MAKER | ERHZ0000757 | 15 ohm,1/10W ,J ,1608 ,R/TP | | |
| 6 | R219 | RES,CHIP | ERHY0000401 | 0 ohm,1/16W,J,1608,R/TP | | |
| 6 | R220 | RES,CHIP | ERHY0000131 | 20K ohm,1/16W,F,1005,R/TP | | |
| 6 | R221 | RES,CHIP | ERHY0000241 | 1K ohm,1/16W,J,1005,R/TP | | |
| 6 | R222 | RES,CHIP | ERHY0000265 | 20K ohm,1/16W,J,1005,R/TP | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|-------------|-------------|----------------------------|-------|--------|
| 6 | R223 | RES,CHIP | ERHY0000258 | 7.5K ohm,1/16W,J,1005,R/TP | | |
| 6 | R224 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R225 | RES,CHIP | ERHY0000261 | 10K ohm,1/16W,J,1005,R/TP | | |
| 6 | R228 | RES,CHIP | ERHY0000202 | 4.7 ohm,1/16W,J,1005,R/TP | | |
| 6 | R230 | RES,CHIP | ERHY0000291 | 330K ohm,1/16W,J,1005,R/TP | | |
| 6 | R231 | RES,CHIP | ERHY0000152 | 82K ohm,1/16W,F,1005,R/TP | | |
| 6 | R236 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R294 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R295 | RES,CHIP | ERHY0000138 | 33K ohm,1/16W,F,1005,R/TP | | |
| 6 | R298 | RES,CHIP | ERHY0000250 | 3.3K ohm,1/16W,J,1005,R/TP | | |
| 6 | R300 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R306 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R307 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R308 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R310 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R311 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R312 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R313 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R315 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R316 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R317 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R321 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R322 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R323 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R326 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R328 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R329 | RES,CHIP | ERHY0000213 | 47 ohm,1/16W,J,1005,R/TP | | |
| 6 | R346 | RES,CHIP | ERHY0000265 | 20K ohm,1/16W,J,1005,R/TP | | |
| 6 | R348 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R349 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R350 | RES,CHIP | ERHY0000207 | 20 ohm,1/16W,J,1005,R/TP | | |
| 6 | R351 | RES,CHIP | ERHY0000273 | 47K ohm,1/16W,J,1005,R/TP | | |
| 6 | R352 | RES,CHIP | ERHY0000226 | 220 ohm,1/16W,J,1005,R/TP | | |
| 6 | R353 | RES,CHIP | ERHY0000244 | 1.5K ohm,1/16W,J,1005,R/TP | | |
| 6 | R354 | RES,CHIP | ERHY0000258 | 7.5K ohm,1/16W,J,1005,R/TP | | |
| 6 | R355 | RES,CHIP | ERHY0000229 | 300 ohm,1/16W,J,1005,R/TP | | |
| 6 | R356 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|-------------|-------------|-----------------------------|-------|--------|
| 6 | R357 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R360 | RES,CHIP | ERHY0000203 | 10 ohm,1/16W,J,1005,R/TP | | |
| 6 | R361 | RES,CHIP | ERHY0000203 | 10 ohm,1/16W,J,1005,R/TP | | |
| 6 | R362 | RES,CHIP | ERHY0000203 | 10 ohm,1/16W,J,1005,R/TP | | |
| 6 | R363 | RES,CHIP | ERHY0000203 | 10 ohm,1/16W,J,1005,R/TP | | |
| 6 | R364 | RES,CHIP | ERHY0000262 | 12K ohm,1/16W,J,1005,R/TP | | |
| 6 | R367 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R369 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R371 | RES,CHIP | ERHY0000201 | 0 ohm,1/16W,J,1005,R/TP | | |
| 6 | R372 | RES,CHIP | ERHY0000261 | 10K ohm,1/16W,J,1005,R/TP | | |
| 6 | R375 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R376 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R377 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R378 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R379 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R380 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R381 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R384 | RES,CHIP | ERHY0000273 | 47K ohm,1/16W,J,1005,R/TP | | |
| 6 | R385 | RES,CHIP | ERHY0000273 | 47K ohm,1/16W,J,1005,R/TP | | |
| 6 | R386 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R390 | RES,CHIP | ERHY0000262 | 12K ohm,1/16W,J,1005,R/TP | | |
| 6 | R409 | RES,CHIP | ERHY0000208 | 22 ohm,1/16W,J,1005,R/TP | | |
| 6 | R410 | RES,CHIP | ERHY0000244 | 1.5K ohm,1/16W,J,1005,R/TP | | |
| 6 | R413 | RES,CHIP | ERHY0000258 | 7.5K ohm,1/16W,J,1005,R/TP | | |
| 6 | R501 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R502 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R503 | RES,CHIP | ERHY0006603 | 36 ohm,1/16W ,J ,1005 ,R/TP | | |
| 6 | R504 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R505 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R506 | RES,CHIP | ERHY0000210 | 30 ohm,1/16W,J,1005,R/TP | | |
| 6 | R507 | RES,CHIP | ERHY0000224 | 180 ohm,1/16W,J,1005,R/TP | | |
| 6 | R508 | RES,CHIP | ERHY0000224 | 180 ohm,1/16W,J,1005,R/TP | | |
| 6 | R509 | RES,CHIP | ERHY0000241 | 1K ohm,1/16W,J,1005,R/TP | | |
| 6 | R510 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R515 | RES,CHIP | ERHY0000261 | 10K ohm,1/16W,J,1005,R/TP | | |
| 6 | R601 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R602 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|----------------|-------------|--|-------|--------|
| 6 | R612 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R613 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R614 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R615 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R616 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R617 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R618 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R619 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R620 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R621 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R622 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R623 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R624 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R625 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R626 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R627 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R628 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R629 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R630 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R631 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R632 | RES,CHIP | ERHY0000223 | 150 ohm,1/16W,J,1005,R/TP | | |
| 6 | R633 | RES,CHIP | ERHY0000233 | 470 ohm,1/16W,J,1005,R/TP | | |
| 6 | R634 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R635 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | R636 | RES,CHIP | ERHY0000280 | 100K ohm,1/16W,J,1005,R/TP | | |
| 6 | SW500 | CONN,RF SWITCH | ENWY0002201 | ANGLE ,SMD ,0.8 dB, | | |
| 6 | U101 | IC | EUSY0181502 | CSP BGA ,204 PIN,R/TP ,GSM/GPRS DIGITAL BASEBAND PROCESSOR / ART7TDMI DSP | | |
| 6 | U102 | IC | EUSY0169301 | 148-TERMINAL BGA ,148 PIN,R/TP ,GSM ANALOG BASEBAND / TYPHOON B | | |
| 6 | U200 | IC | EUSY0077701 | SC70-5 ,5 PIN,R/TP ,1.8V Low Voltage Comparator with Rail-to-Rail Input | | |
| 6 | U201 | IC | EUSY0204801 | SC82-AB (SC70-4) ,4 PIN,R/TP ,80mA CMOS LOW IQ LDO VOLTAGE REGULATOR / 2.5V | | |
| 6 | U202 | IC | EUSY0119002 | 4X3 UCSP / CODE : B12-4 ,10 PIN,R/TP ,DUAL SPDT ANALOG SWITCHES | | |
| 6 | U203 | IC | EUSY0111601 | 32-PIN QFN ,32 PIN,R/TP ,MA-3 / 40 TONES / FM + WAVEFORM TABLE | | |
| 6 | U302 | IC | EUSY0206101 | 80-ACTIVE BALL STACKED CSP ,88 PIN,R/TP ,128 MLC NOR (L30 : TYAX) / 64-PSRAM | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|-----------------------|-------------|--|-------|--------|
| 6 | U402 | IC | EUSY0245401 | DFN ,16 PIN,R/TP ,Main 3 LEDs(60mA) + Flash (300mA) Charge pump | | |
| 6 | U501 | PAM | SMPY0007201 | 35 dBm,53 %,0.8 A,-50 dBc,50 dB,6.0*8.0*1.2 ,SMD ,QUAD | | |
| 6 | U503 | IC | EUSY0118602 | SOT23 ,5 PIN,R/TP ,2.85V/150mA Low Noise uCap LDO Regulator | | |
| 6 | U504 | IC | EUSY0145902 | SOT23-5 ,5 PIN,R/TP ,300mA, 2.85V,LDO | | |
| 6 | U505 | IC | EUSY0161301 | 8x8 LGA ,28 PIN,R/TP , | | |
| 6 | VA204 | RES,VARIABLE,ETC | ERVZ0000101 | ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR | | |
| 6 | VA305 | RES,VARIABLE,ETC | ERVZ0000101 | ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR | | |
| 6 | VA306 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |
| 6 | VA309 | RES,VARIABLE,ETC | ERVZ0000101 | ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR | | |
| 6 | X101 | X-TAL | EXXY0015601 | .032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 , | | |
| 6 | X500 | VCTCXO | EXSK0005002 | 26 MHz,1 PPM,10 pF,SMD ,3.2*2.5*1.1 , | | |
| 5 | SAFD00 | PCB ASSY,MAIN,SMT TOP | SAFD0048601 | | | |
| 6 | C310 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C311 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C313 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C315 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C316 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C317 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C318 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C319 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C320 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C321 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C322 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C323 | CAP,CERAMIC,CHIP | ECCH0004904 | 1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP | | |
| 6 | C411 | CAP,CERAMIC,CHIP | ECCH0000167 | 0.1 uF,6.3V,K,X5R,HD,1005,R/TP | | |
| 6 | C412 | CAP,CERAMIC,CHIP | ECCH0000110 | 10 pF,50V,D,NP0,TC,1005,R/TP | | |
| 6 | C488 | CAP,CERAMIC,CHIP | ECCH0000137 | 330 pF,50V ,K ,X7R ,HD ,1005 ,R/TP | | |
| 6 | LD200 | DIODE,LED,CHIP | EDLH0007901 | RED ,1608 ,R/TP ,Indicator,0.4T Red LED | | |
| 6 | LD300 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD303 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD304 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD305 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD306 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD307 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD308 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|------------------|-------------|---|-------|--------|
| 6 | LD309 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD310 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD311 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD312 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | LD313 | DIODE,LED,CHIP | EDLH0004502 | BLUE ,1608 ,R/TP ,0.35T | | |
| 6 | MIC200 | MICROPHONE | SUMY0009201 | FPCB ,-44 dB,4.0*1.3 ,SMD TYPE | | |
| 6 | Q200 | TR,BJT,NPN | EQBN0007101 | EMT3 ,0.15 W,R/TP ,LOW FREQUENCY | | |
| 6 | R218 | RES,CHIP | ERHY0000231 | 390 ohm,1/16W,J,1005,R/TP | | |
| 6 | R226 | RES,CHIP | ERHY0000207 | 20 ohm,1/16W,J,1005,R/TP | | |
| 6 | R301 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R302 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R303 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R304 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R305 | RES,CHIP | ERHY0000220 | 100 ohm,1/16W,J,1005,R/TP | | |
| 6 | R332 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R335 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R336 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R337 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R338 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R339 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R340 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R341 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R342 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R343 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R344 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R345 | RES,CHIP | ERHY0000217 | 75 ohm,1/16W,J,1005,R/TP | | |
| 6 | R373 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R382 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R383 | RES,CHIP | ERHY0000237 | 680 ohm,1/16W,J,1005,R/TP | | |
| 6 | R418 | RES,CHIP | ERHY0000274 | 51K ohm,1/16W,J,1005,R/TP | | |
| 6 | U403 | IC | EUSY0129501 | SC-74A ,3 PIN,R/TP ,HALL-EFFECT SWITCH | | |
| 6 | VA202 | RES,VARIABLE,ETC | ERVZ0000101 | ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR | | |
| 6 | VA203 | RES,VARIABLE,ETC | ERVZ0000101 | ohm, PIN, ,SMD ,R/TP ,1005 SIZE CHIP VARISTOR | | |
| 6 | VA300 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |
| 6 | VA301 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |
| 6 | VA302 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |
| 6 | VA303 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |

12. EXPLODED VIEW & REPLACEMENT PART LIST

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|-------------------|-------------|-----------------------------------|-------|--------|
| 6 | VA304 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |
| 6 | VA307 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |
| 6 | VA308 | VARISTOR | SEVY0000702 | 14 V,10% ,SMD , | | |
| 5 | SPFY00 | PCB,MAIN | SPFY0086101 | FR-4 ,1.0 mm,BUILD-UP 8 ,GE200 | | |
| 3 | SNGF00 | ANTENNA,GSM,FIXED | SNGF0006301 | 3.0 ,-2.0 dBd, ,EGSM+DCS, Intenna | | 47 |

12. EXPLODED VIEW & REPLACEMENT PART LIST

12.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

| Level | Location No. | Description | Part Number | Specification | Color | Remark |
|-------|--------------|------------------------|-------------|---|--------|--------|
| 3 | MHBY00 | HANDSTRAP | MHBY0001101 | Neck Strap 380mm | Gray | |
| 3 | SBPL00 | BATTERY PACK,LI-ION | SBPL0076308 | 3.7 V,1000 mAh,1 CELL,PRISMATIC ,GC200(K-PJT) BATTERY, 523450 INNERPACK | Silver | 53 |
| 3 | SGEY00 | EAR PHONE/EAR MIKE SET | SGEY0003204 | L1200 ,MONO TYPE | | |
| 3 | SSAD00 | ADAPTOR,AC-DC | SSAD0007833 | FREE ,50 Hz,5.2 V,800 mA,CE,CB ,PLUG(4.8 Pi) | | |
| 3 | WSYY00 | SOFTWARE | WSYY0227601 | C2100P40-91-V101-XXX-XX MAR 27 2005+0 | | |

